VILLAGE OF BEAVER SITE ASSESSMENT PROJECT REPORT

BEAVER, ALASKA

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Prepared for the Alaska Department of Environmental Conservation

by

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1 EXECUTIVE SUMMARY

A site investigation was performed at seven bulk fuel storage and related facilities in Beaver, Alaska in July 2001. The purpose of the investigation was to document the presence and extent of contamination at the facilities and provide sufficient information to develop a cleanup plan.

Diesel contamination was identified at seven sites. At the Cruikshank School Tank Farm and associated old school generator building the most widespread contamination was detected. Surface contamination levels of over 10,000 mg/kg and 19,000 mg/kg at 8.5 feet below the ground were encountered. Approximately 5,600 square feet of contaminated surface soil was documented. The depth of contamination could not be determined with the equipment available; nonetheless, using assumptions regarding the depth to groundwater and/or permafrost, the volume of contaminated soil present was estimated at 1,640 cubic yards. Cleanup of the contaminated area via excavation is recommended, particularly contaminated surface soils. Potential impact to the groundwater should also be assessed using a drilling rig. The village drinking water supply well is between this site and the river. Potential to contaminate the drinking water well is not known.

A used oil contaminated area was documented at the Joint Utilities Electric Tank Farm. The contaminated area was estimated at 4 cubic yards. An unknown volume of diesel contaminated soil appears present at threaded fittings along the pipeline based on visual soil staining. Excavation at the pipeline leaks is not practical because of proximity to the building. Cleanup of the contaminated soil and replacement of the threaded pipeline with welded joints is recommended. In-situ remediation of contamination near the structure should be considered.

Small spills have been reported at the Innuit Store Gasoline Tanks. No significant diesel contamination was encountered.

No significant diesel contamination was encountered at the Abandoned Innuit Store Gasoline tank.

Approximately 1 cubic yard of contamination was encountered at the Airport Fill line Pipeline. The contamination appeared associated with use of the flexible fueling hose. Construction of a lined area to catch overfills and drips was recommend to prevent future releases associated with use of the tank by residents.

An active fuel drip was observed at the Washeteria Pipeline. The pipeline has threaded fittings and it is routinely driven over by ATVs. The contamination extends to at least 7.5 feet below ground surface and covers approximately 400 square feet. The volume of contaminated soil was estimated at 110 cubic yards. Replacement of the pipe with one constructed with welded fittings is recommended. Remediation of contaminated soil down to about 15 feet below grade is recommended. Information gained during the excavation could be used to determine if remaining contamination needs to be addressed using in-situ technology.

2 INTRODUCTION TO PROJECT

OASIS performed an environmental site assessment of six fuel facilities, located in Beaver, Alaska (Figure 1) during July 2001. The Alaska Department of Environmental Conservation (ADEC) authorized OASIS to perform this work under Contract 18-5001-12 in accordance with the approved work plan. Notice to proceed for this project was received from the ADEC on August 15, 2001.

This report describes the field activities and results from the environmental site assessment at six fuel facility sites at the Village of Beaver.

2.1 PROJECT MANAGER

The project manager for the Village of Beaver site assessment was Karl Hill.

2.2 FIELD PERSONNEL

Field personnel for this project included Karl Hill and Nate Oberlee for soil sampling and test pit excavation oversight, and Beaver resident Richard Williams for backhoe operation.

2.3 LOGISTICS OF PROJECT

Sampling and field equipment was shipped from Anchorage to Fairbanks via Carlile Transportation Company several days prior to field personnel departure to Fairbanks. Carlile delivered the equipment directly to Warbelow's Air Ventures at Fairbanks airport. OASIS personnel arranged to have Warbelow's deliver the equipment to Beaver and have it stored by the Warbelow's representative in Beaver.

OASIS personnel flew from Anchorage to Fairbanks on Alaska Airlines and on to Beaver with Warbelow's Air Ventures. OASIS personnel were met by the Warbelow's representative when they arrived at the Beaver airport. Accommodations and transportation were then secured through the Beaver Tribal Council (BTC) office.

Use of a backhoe owned by BTC was arranged prior to mobilizing for the site assessment. The backhoe was used for test pit excavating, and could excavate to approximately 10 feet below ground surface, depending on the presence of surface obstacles.

The backhoe operator met the OASIS personnel at the BTC office with the intent of completing his 8-hour HAZWOPER refresher over the internet at the office. After many attempts at various ways of accessing the refresher courses on the internet, it was determined that the satellite internet connection serving the Village of Beaver was not fast enough to operate the refresher courses on the internet. The next option was to send the operator to the Tanana Chiefs Conference (TCC) in Fairbanks to use their internet connection for completion of the refresher course. Due to limited flight schedules and office hours at the TCC, the operator was not able to return to Beaver until three days after OASIS personnel initially arrived at Beaver. While the operator was in Fairbanks receiving his refresher training, OASIS personnel met with various residents to identify sites for investigation. After the operator returned to Beaver, further delays were encountered when the excavating equipment to be used would not start. OASIS personnel had been notified the day before that the equipment was operable.

OASIS personnel assisted the person in charge of the equipment with repair of the backhoe. After the equipment was once again operable, the project proceeded relatively smoothly.

At completion of the fieldwork for the project, OASIS departed on a Warbelow's flight to Fairbanks. The flight that OASIS departed on coincidently had enough room to transport all of the field equipment and samples as well. Samples and a small amount of field gear were checked as baggage on Alaska Airlines for return with OASIS personnel to Anchorage. The remainder of the field equipment was stored at Warbelow's and picked up by Carlile Transportation Company for shipment back to Anchorage.

3 OBJECTIVES OF INVESTIGATION

The main objective of this assessment was to collect enough data from each of the fuel facility sites to develop a full site remediation work plan and cost proposal for existing and former AST sites in the village of Beaver, Alaska. The goals of the assessment effort include collection and analysis of environmental samples to characterize the levels and extent of contamination at the sites; establishment of good rapport with the village residents; collection of firsthand historic spill site information; and verification of anecdotal information by performing personal interviews, inspecting the sites, and performing historic document reviews.

3.1 PURPOSE

To conduct a site investigation and assess active and abandoned bulk fuel storage facilities and pipelines in the Village of Beaver, Alaska and assess the need for remediation.

3.2 STRUCTURE

The structure of this site assessment report follows the outline set forth in the RFP for environmental services for the village of Beaver.

3.3 ADEC CLEANUP LEVELS UTILIZED

OASIS recommends use of 18 AAC 75 Method Two Under 40 Inch Zone cleanup levels for determining soil cleanup levels for the Village of Beaver. The Beaver area appears to be primarily underlain by permafrost, but the continuity of the permafrost could not be determined.

4 VILLAGE SUMMARY

Beaver is a predominantly mixed Athabascan Indian and Eskimo village located on the north shore of the Yukon River. Census results from April 2000 indicate that there are approximately 84 residents of the village. Almost all residents of the village participate in subsistence hunting and fishing activities throughout the year. Access is via boat or small airplane in the summer and snowmobile or small airplane in the winter.

4.1 GENERAL INFORMATION

4.1.1 Village History

Gold discoveries in the Chandalar region in 1907 led to the founding of Beaver. It was established as the Yukon River terminus for miners heading north to the gold fields. The Alaska Road Commission built a trail from Beaver north to Caro on the Chandalar River around 1907. In 1910, Thomas Carter and H.E. Ashelby established a store at Beaver, and three freight companies operated on the trail, commonly known as Government Road. In 1911, about the time the gold rush was over, Frank Yasuda, a Japanese man who had traded at Point Barrow and prospected in the Brooks Range, arrived with a group of Eskimos and became a partner in the trading post. They served the remaining mines in the region, supplied riverboats with firewood, and traded with Eskimo and Indian fur trappers. A post office was established in 1913, and a second trading post opened in the early 1920s. The first Beaver school opened in 1928, and an airstrip was built in the 1930s. Beaver's population remained stable from 1950 through the 1970s. In 1974, the village council purchased the local store and set it up as a cooperative, with villagers holding shares of stock.

4.1.2 Location

Beaver is located on the north bank of the Yukon River, approximately 60 miles southwest of Fort Yukon and 110 miles north of Fairbanks. It lies in the Yukon Flats National Wildlife Refuge at approximately 66° 21' N Latitude, 147° 23' W Longitude (Sec. 30, T018N, R002E, Fairbanks Meridian). The community is located in the Fairbanks Recording District. The area encompasses 19 sq. miles of land and 4 sq. miles of water.

4.2 MAPS

Location and vicinity maps of the Beaver area are provided as part of this report. Site figures for each fuel facility location are also provided and referenced in the text of this document.

4.2.1 State Location Map

A state location map is provided as an inset to Figure 1.

4.2.2 Vicinity Map

Figure 2 is an aerial photo showing major features of the village and its vicinity including items such as bulk fuel storage areas, structures and areas of interest, and the landing strip location.

4.2.3 Aerial Photos

The June 2001 aerial photograph of Beaver, Alaska is provided in Figure 2.

4.3 VILLAGE CONTACTS

Village contacts and telephone numbers are summarized in the following table.

Table 4-1: Village Contacts

Name/Title	Association/ Company	Telephone Number
Charlene Fisher	1st Chief, Beaver Tribal Council	628-6560
Paul Williams Sr.	2nd Chief, Beaver Tribal Council	628-6213
Richard Williams	Equipment Operator	628-6329
Bonnie Adams, Wilma Pitka	Beaver Tribal Council Admin	628-6126
Thomas Adams, Mariah Wade (secretary)	Beaver Joint Utilities	628-6214
Sampson Peters	Yukon Flats School District – Maintenance Head (Fort Yukon)	662-2515 (ext. 25)
George Yatlin James Wade Sr.	Beaver Washeteria	628-9123
Clinton Wiehl Cindy Wiehl	INNUIT CO-OP Store	628-6127
William Henry	Cruikshank School-maintenance, Airport maintenance (State)	628-6101

4.4 EQUIPMENT IN VILLAGE

Heavy equipment for rent in the village includes a John Deer JD 450C backhoe and a Case 455 track loader. The backhoe was prone to breakdown, but the loader appeared to be fairly reliable. Both pieces of equipment are owned by BTC and are located at the

Beaver Joint Utilities (BJU) power plant. A large loader owned by the State of Alaska is located at the airport and is used for State of Alaska maintenance work. This loader appears to be in excellent condition. BTC also has an end dump truck with a 12 cubic yard dump bed for rent. Reliability of this piece of equipment is not known since it was not used during this project. All Terrain Vehicles (ATVs) and trailers are also available to rent from various members of the community and can best be found through communication with the BTC. BTC owns and rents out one ATV, which was inoperable at the time the fieldwork was performed for this project.

4.5 RESIDENTS WITH 40-HOUR TRAINING

OASIS identified only one resident of the Village of Beaver with 40-hour HAZWOPER training. Richard Williams is the resident with his 40-hour training. Richard does most of the heavy equipment operation with the BJU equipment. He has completed heavy equipment training with West Coast Training in Oregon.

4.6 VILLAGE WATER SUPPLIES

Potable water is supplied to the village from a well located on the northern bank of the Yukon River approximately 35 feet from the river, as shown on Figure 2. The well was installed in 1997 and was drilled to approximately 64 feet below ground surface. Water from this well serves the school, the council building, and the washeteria. Residents of the village haul water for their homes from the washeteria. Two older wells installed around 1968 and 1978 are also in the vicinity of the new well, but are no longer in use. Information regarding the reason for the well replacements, and method of well abandonment was not available from the ADEC Drinking Water Protection Program nor from the TCC. Well logs for the new well and locations of the old wells are included as Appendix A.

4.7 SOURCE MATERIAL SITES

The gravel borrow source for the village is located on the northern side of the airport landing strip, near the west end, as shown on Figure 2. The area appears to be an abundant gravel source.

4.8 LANDFILLS

The permitted landfill currently used by the residents of Beaver is located approximately 5 miles west of town, with access to it by a gravel road. The landfill is fenced in and divided into two sections. One section is used for disposal of household waste, while the other is used for disposal of larger items such as appliances and vehicles. A trash burner is located in the household waste area.

4.9 SUBSISTENCE AND RECREATIONAL AREAS

Subsistence fishing and hunting are important sources of food for the residents of Beaver. Fishing and hunting for subsistence use is normally done outside of the village. Nets and fish wheels are accessed by boat and are typically located over a mile from the main part of the village. Some residents bring the fish they catch back to the village to

process them, so there are several smoke houses in the village itself. Boats are also used to access hunting areas either upriver or downriver from the village.

The main recreational areas in town appear to be the BTC building, the washeteria area, and the school playground.

5 SITE INFORMATION

OASIS identified seven above ground storage tank sites in the Village of Beaver. Five were identified in the July 18, 2001 workplan. Two additional sites were identified as a result of site reconnaissance activities. The sites are listed below:

- Site 1: Cruikshank School Tank Farm,
- Site 2: Beaver Joint Utilities Tank Farm,
- Site 3: Innuit Store Gasoline Tanks (Airport),
- Site 4: Abandoned Innuit Store Gasoline Tank,
- Site 5: Airport Fill Line Pipeline,
- Site 6: Old School Generator Building, and
- Site 7: Fuel Line From School to Washeteria.

5.1 SITE 1: CRUIKSHANK SCHOOL TANK FARM

The Cruikshank School Tank Farm was the highest priority site in the Village of Beaver and it is located in the vicinity of the Cruikshank School. The tank farm is located on the south side of the school playground, east of the BTC building. The site is the highest priority because there are plans to upgrade the existing fuel facility.

5.1.1 Site Map/Drawing

Figure 3 shows tank locations relative to other site features and structures. Sampling locations are identified, as well as piping/header locations, and photograph locations.

5.1.2 Site Description

Global Positioning System (GPS) determined coordinates for the Cruikshank School tank farm are N 66° 21.585', W 147° 23.805'. The tank farm is an active fuel storage facility that was constructed in the early 1970's. The tank farm is owned by the Yukon Flats School District (YFSD) and jointly operated by BTC. The YFSD generally uses the diesel fuel stored in five of these tanks to supply the school and the school shop day tank. The three tanks that are operated by the BTC serve the washeteria day tank.

The tank farm consists of nine vertical aboveground tanks with a total fuel storage capacity of approximately 57,000 gallons. Individual tank capacities range from approximately 4,855 gallons to approximately 6,775 gallons (Department of Community and Regional Affairs (DCRA), Division of Energy). The tanks are welded steel construction and rest on wood platforms made of treated timbers and planks. The six tanks operated by YFSD are designated #1 through #6. The remaining three operated by BTC are designated #7 through #9. Tank #1 has not been in use for at least five years due to leaking fittings at the bottom of the tank (William Henry).

Although no documented spill history was found for the site, conversations with several residents indicated that fuel has probably been spilled in the tank farm area various times during the life of the tank farm.

5.1.3 Site Reconnaissance

The contacts for this site are William Henry and Sampson Peters. William Henry is the local resident in charge of day-to-day operations of the school tank farm and shop. Sampson Peters is the head of maintenance for the YFSD. He is stationed in Fort Yukon.

Several valves and fittings on the interconnecting piping within the tank farm appear to have leaked to varying degrees. Tank #2 is fitted, at the bottom on the north side of the tank, with a flexible hose that is used to fill the school shop day tank. When not in use the hose is coiled on the gate of the fence that encloses the tank farm. The tank farm is not lined and does not have secondary containment berms.

Much of the area east of the tank farm was inaccessible by backhoe due to the presence of aboveground piping and a utilidor running north-south approximately 27.5 feet east of the tank farm fence. The tree line east of the tank farm also limited backhoe access to the east side of the tank farm, as it began approximately 14 feet from the fence. Due to these constraints, most test pits on the east side of the tank farm were limited to hand excavated test pits. Hand excavated test pits as well as backhoe excavated test pits for this site are shown on Figure 3.

Due to limited backhoe access, most of the sampling that occurred on the east side of the school tank farm was accomplished using a shovel to hand excavate test pits. Eleven soil samples were collected from hand excavated test pits on the east side of the tank farm.

Further contamination delineation in the school tank farm area occurred on the north, south, and west sides using a backhoe. A total of 13 test pits and trenches were backhoe excavated to as part of the assessment of the school tank farm. Backhoe excavated test pits and trenches ranged in total depth from five feet below ground surface to 9.7 feet below ground surface. Vertical extent of excavation was mainly governed by backhoe reach. Further excavation to the north was not performed due to the presence of the school playground.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.1.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 3.

Analytical sample results for DRO concentrations in the school tank farm area range from non-detect to 19,000 mg/kg. RRO concentrations range from non-detect to 2,170 mg/kg. GRO contamination of 1,600 mg/kg at point STF3-2 and the BTEX concentrations were all non-detect except for Xylenes at 36 mg/kg.

5.1.5 Discussion and Recommendations

Analytical results exceeding 18 AAC 75 Method Two cleanup levels for DRO in soil were present in much of the school tank farm area. A GRO/BTEX sample collected from this area also indicated GRO levels exceeding the Method Two cleanup levels. The

analytical results for BTEX did not indicate BTEX concentrations exceeding Method Two cleanup levels. The two main areas of contamination appear to be west to northwest of the tank farm and directly east of the tank farm.

Assessment of the contaminated area east of the tank farm was limited because access with the backhoe was not feasible. Field screening and analytical sample collection was performed from shallow test pits dug by hand. Analytical sample results for DRO at this depth indicate high concentrations of DRO ranging from 5,530 mg/kg to 19,000 mg/kg. Further excavation to the east of the tank farm was not possible due to interference from large trees and a utilidor. The estimated contamination area on the east side of the tank farm is approximately 600 ft^2, and extends vertically below ground surface at least three feet, for an estimated volume of 66 cubic yards of soil. Although excavation further to the east was not possible, it is likely that the contaminated area extends in that direction.

Analytical results for samples collected from the contaminated area west and northwest of the tank farm indicate DRO concentrations ranging from non-detect to 11,100 mg/kg. The GRO results from a sample collected west of the tank farm indicate GRO concentrations of 1,600 mg/kg. The estimated contamination area is approximately 5,000 $feet^2$, and extends at least 8.5 feet below ground surface, for an estimated volume of 1,574 cubic yards of contaminated soil.

Analytical sample results from test pits in the northeast corner and the south and southeast sides of the tank farm do not indicate DRO concentrations exceeding Method Two cleanup levels.

With high concentrations of DRO to at least 8.5 feet below ground surface on the west and northwest sides of the tank farm, and at least 3.0 feet below ground surface on the east side of the tank farm, it is possible that contamination has impacted groundwater or intersected permafrost.

DRO concentrations in the soil at the school tank farm site are high enough to pose a hazard to residents by direct contact. The contamination levels also indicate that the soil in the area of the tank farm will act as a continuing source of leachate to groundwater. With the levels of contamination shown to be present to 8.5 feet below ground surface, it is reasonable to expect the contamination to extend vertically to at least 15 feet below ground surface. OASIS recommends soil removal in the contaminated areas to approximately 15 feet below ground surface. At that point, contamination remaining at the bottom of the excavation should be documented. A down gradient monitoring well should then be installed to identify migration of contamination to groundwater, if present. Using information obtained from the activities mentioned above, a decision could be made regarding necessity of an in situ remediation system.

5.2 SITE 2: BEAVER JOINT UTILITIES TANK FARM

The BJU Tank Farm is located on the west side of C Street, just north of the post office, and across the street from the Cruikshank School.

5.2.1 Site Map/Drawing

Figure 4 shows tank locations relative to other site features and structures. Sampling locations are identified, as well as piping/header locations, and photograph locations.

5.2.2 Site Description

The GPS coordinates for the BJU-E tank farm are N 66° 22.63', W 147° 23.94'. The BJU-E tank farm is an active fuel storage facility that was constructed in the early to mid 1990s. The tank farm was first operated by the BTC, but is currently being run by BJU. Diesel fuel that is stored in this tank farm is generally used to fill the generator day tanks. Fuel is also sold to residents who bring fuel containers to the generator building and fill the containers with a fuel pump located outside the door to the generator house.

The tank farm consists of 3 horizontal aboveground tanks with a total fuel storage capacity of approximately 30,000 gallons. The tanks are skid mounted welded steel construction. The tank farm is in a lined area with secondary containment berms.

OASIS did not locate any information regarding documented spills at the BJU tank farm.

5.2.3 Site Reconnaissance

The contact for this site is Thomas Adams. Mr. Adams is in charge of daily maintenance of the generators and tank farm including filling of generator day tanks and selling fuel to local residents.

The bottom of the containment area for the BJU-E tank farm is covered with grass, and also has standing water with sheen present. An obvious, dripping leak was present from the valve in the piping leading from the southernmost of the tanks.

The area around the pump used to fill containers brought by residents was heavily stained in an area about 3 feet in diameter. An adjacent area, approximately 4.5 feet by 7 feet, was also heavily stained due to a leaking pipe joint in the piping from the tank farm to the generator day tank, where the piping goes beneath the generator building. Staining was also present on the south side of the building where the same piping penetrates the generator room floor to connect to the generator day tank. A leaking piping joint on the west side of the tank farm, where the piping exits the tank farm to serve the generator building, also produced heavy staining in an area approximately 4 feet in diameter. At this location, the piping enters the ground surface and is buried until it reaches the generator building.

A dark, stained soil area exists on the west side of the tank farm fence about mid-way up the fence line. Residents indicated that this was an area where used oil was previously stored in 55-gallon drums.

Possible stressed vegetation was present along the north side of the fence, starting at the northwest corner and continuing east for approximately 14 feet, and north approximately 5 feet.

Four of the areas described above were investigated using a backhoe to dig test pits. The excavated areas and sample locations are shown on Figure 4. Test pit excavation in the NPT2 area was limited because the route of the buried underground piping was unknown, as well as by structural interferences from the generator building and the tank farm fence.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.2.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 4.

Analytical sample results from the test pits in the area of the BJU-E tank farm indicate DRO concentrations ranging from non-detect to 36,400 mg/kg. RRO concentrations range from non-detect to 59,200 mg/kg. The single GRO/BTEX sample that was collected at this site indicated GRO concentrations at 770 mg/kg. BTEX results showed non-detect for all contaminants except for the Xylenes, which were present at a concentration of 68 mg/kg.

5.2.5 Discussion and Recommendations

Laboratory analytical results for one sample collected in the shallow subsurface of the NPT1 test pit location near the BJU-E tank farm indicates DRO and RRO concentrations exceeding 18 AAC 75 Method Two cleanup levels. Analytical sample results from samples collected beneath and several feet on either side of the same sample indicate concentrations of DRO and RRO that do not exceed Method Two cleanup levels. The backhoe operator indicated that the area used to have waste oil drums stored on it. It appears the contamination is limited to a small area extending outwards from the fence about eight feet with a width of about six feet. The contamination appears to extend vertically into the ground about 1.5 feet.

A shallow subsurface sample collected from the NPT2 test pit location indicates DRO and GRO concentrations exceeding 18 AAC 75 Method Two cleanup levels. Sample results from a sample collected four feet below the first sample shows DRO concentrations below Method Two cleanup levels. Stained soil appears to be present in a 4 feet diameter immediately surrounding the pipe as it enters the ground, and extending less than 5 feet below ground surface.

Based on the localized contamination encountered at each of the two test pits mentioned above, OASIS recommends removing the contaminated soil at the NPT1 and NPT2 locations by excavating. OASIS estimates an approximate removal volume of 4 cubic yards of contaminated soil from the two areas combined.

Based on visual observation of the generator house area, remediation of soil may also be necessary directly adjacent to the structure. Piping joint leaks at the generator house have caused large amounts of stained soil on the north and south sides of the structure. Due to structural interference in this area, excavation of the soil may not be practical. In situ remediation of the soil may need to be considered.

OASIS also recommends that all threaded piping from the tank farm at the BJU-E tank farm be replaced with welded piping.

5.3 SITE 3: INNUIT STORE GASOLINE TANKS (AIRPORT)

The Innuit Store Gasoline Tanks (Airport) are located on the south side of the landing strip, at the south edge of the airplane loading/unloading area.

5.3.1 Site Map/Drawing

Figure 5 shows tank locations relative to other site features and structures. Sampling locations are identified, as well as piping locations, and photograph locations.

5.3.2 Site Description

The GPS coordinates for the Innuit Store Gasoline Tanks (Airport) are N 66° 21.681', W 147° 24.026'. The Innuit Store Gasoline Tanks (Airport) are an active fuel storage facility that was constructed in the early 1990s. The tanks are owned and operated by the Innuit Co-op Store. Gasoline stored in these storage tanks is generally used to fill gasoline containers for customers who purchase the gasoline from the Inuit Store. Residents purchase the gas at the store and drop their empty jugs off near the fuel tanks to be filled by a store employee.

The fueling facility consists of four horizontal aboveground tanks with a total fuel storage capacity of approximately 3,000 gallons. The tanks are welded steel construction. Two of the tanks are 1,000-gallon tanks and two are 500-gallon tanks. The 1,000-gallon tanks are the primary tanks used for gasoline storage, and rest on wood cradles constructed of logs. The 500-gallon tanks are considered "back up" tanks. These tanks are not usually filled, and lay directly on the ground surface. Gasoline is taken from the 1,000-gallon tanks by a flexible hose with a fueling nozzle that is gravity fed. When not in use the nozzle is secured to the top of the tank with a chain and padlock.

Although no spills have been documented for these tanks, residents indicate that an occasional overfill occurs, and the valves in the piping from the drums required tightening to stop slow leaks in the past.

5.3.3 Site Reconnaissance

The contact for this site is Cindy Wiehl. Ms. Wiehl is in charge of the day-to-day operation of the Innuit Co-op store.

Slight staining was apparent at the ground surface below the easternmost of the two 1000-gallon tanks. Valves and piping did not appear to be leaking at the time of this assessment.

Two test pits were excavated near the Innuit Store Gasoline tanks at the airport. The most extensive excavating was done near the front of the two 1,000-gallon gasoline tanks, where gasoline is dispensed. Permafrost was encountered at approximately 5.5 feet below ground surface in this area.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.3.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 5.

GRO concentrations range from non-detect to 410 mg/kg. Concentrations of Benzene are non-detect. Toluene concentrations range from non-detect to 7.7 mg/kg,

Ethylbenzene ranges from non-detect to 15 mg/kg, and Xylenes ranged from non-detect to 69 mg/kg.

Because the tanks present at this site are used exclusively for gasoline storage, only one analytical sample for DRO/RRO was collected at the site. The laboratory sample results indicate a DRO concentration of 64.7 mg/kg, and non-detect for RRO in the shallow subsurface.

5.3.5 Discussion and Recommendations

The analytical sample result from the DRO/RRO sample collected at the Innuit Store gasoline tanks at the airport did not indicate concentrations of either analyte above 18 AAC 75 Method Two cleanup levels.

One sample collected for GRO on this site indicated levels of the contaminant exceeding 18 AAC 75 Method Two cleanup levels. Based on the analytical results for this site, the area with the highest GRO concentration is in the location of the container fill nozzle. Contamination in this area is likely caused by accidental overflows of gasoline containers.

With underlying permafrost and no direct risk to drinking water, OASIS recommends that the contaminated soil be left in place.

5.4 SITE 4: ABANDONED INNUIT STORE GASOLINE TANK

The abandoned Innuit Store gasoline tank is located on the western side of the village along the riverbank just south of Second Avenue.

5.4.1 Site Map/Drawing

Figure 6 shows tank locations relative to other site features and structures. Sampling locations are identified, as well as piping locations, and photograph locations.

5.4.2 Site Description

The GPS coordinates for the abandoned Innuit Store gasoline tank farm are N 66° 21.550', W 147° 24.367'. The abandoned Innuit Store gasoline tank is an inactive fuel storage tank that was constructed around 1980. The tank is owned by the Innuit Store, but has not been used since gasoline for the community started being delivered by airplane in the early 1990's. Gasoline that was stored in the tank was dispensed to residents at the tank site with an electric pump.

The tank consists of one horizontal aboveground tank with a total fuel storage capacity of approximately 10,000 gallons. The tank is welded steel construction, skid mounted, and sits in a lined area with secondary containment berms. A barge fill line enters the tank from the edge of the riverbank and passes through the south end of the containment berm. A second pipe exits the north end of the tank, passes through the containment berm, and enters the pump house.

No information on documented spills was found for this site.

5.4.3 Site Reconnaissance

The contact for this site is Cindy Wiehl.

The entire ground surface in the vicinity of the abandoned Innuit Store gasoline tank is overgrown with grass and small trees. The actual soil on the ground surface could not be inspected for staining. None of the piping appeared to be leaking residual fluid.

Two test pits were excavated using a backhoe at the abandoned Innuit Store gasoline tank. Excavation on the south side of the tank was not possible due to the proximity of the containment berm to the Yukon River. One test pit was excavated close to the outer eastern edge of the containment berm. The other test pit was excavated in the area next to the pump house where residents indicated fuel was dispensed to containers.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.4.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 6.

Because the storage tank present at this site was used exclusively to store gasoline, only one analytical sample for DRO/RRO was collected at the site. The laboratory sample results indicate non-detect for both DRO and RRO concentrations for the sample collected from the test pit on the east side of the tank.

All analytical results for GRO/BTEX samples collected at this site were below detection limits.

5.4.5 Discussion and Recommendations

With no analytical sample results exceeding 18 AAC 75 Method Two cleanup levels, OASIS recommends no further assessment of this site.

5.5 SITE 5: AIRPORT FILL LINE PIPELINE

The airport fill line pipeline is located in the southeast corner of the airplane loading/unloading area, where C Street enters the loading/unloading area.

5.5.1 Site Map/Drawing

Figure 7 shows the fill line location with respect to the test pits excavated for that location. Sampling locations are identified, as well as piping locations, and photograph locations.

5.5.2 Site Description

The GPS coordinates for the airport fill line pipeline are N 66° 21.693', W 147° 23.910'.The airport fill line pipeline is an active pipeline that was constructed in 1985. The pipeline is operated by the YFSD and BJU. Diesel fuel transported in this pipeline is generally used to supply the YFSD tank farm and the BJU-E generator tank farm.

The pipeline fill location consists of a 3-inch pipe connected to a flexible hose approximately four feet above the ground surface. A vertical support is attached to the steel pipe. The flexible hose has a quick connect coupling for connecting to the fuel source. The welded steel pipe angles down to the ground where a cutoff valve is located, and continues in towards the village. The pipeline is a 3-inch diameter, welded steel pipeline that is approximately 400 feet long. The pipeline runs aboveground along C Street to the BJU-E tank farm. From there it branches off and is buried where it continues east and crosses C Street. The pipeline resurfaces on the east side of C Street and passes behind the school to serve the YFSD tank farm.

No documented spills were identified for this pipeline.

5.5.3 Site Reconnaissance

The contacts for this site are Thomas Adams and William Henry.

No stained soil or leaking pipeline joints were identified during inspection of the airport pipeline. The only stained soil location identified was beneath the end of the steel pipe where it connected to the flexible fueling hose at the airport fueling connection.

Three test pits were excavated at the airport fill location for the pipeline. Staining was apparent in the top 1.5 feet of the ground surface.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.5.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 7.

Analytical sample results at the airport fill location show DRO concentrations ranging from non-detect to 37.7 mg/kg. All RRO results were non-detect. The GRO concentrations were found to be 270 mg/kg and BTEX concentrations were all non-detect.

5.5.5 Discussion and Recommendations

Analytical sample results from DRO/RRO and GRO/BTEX samples collected at the pipeline fill location at the airport do not indicate concentrations of any analyte above 18 AAC 75 Method Two cleanup levels. However, visual observations indicate moderate staining at ground surface to about 1.5 feet below ground surface. The extent of surface staining is approximately four feet in diameter.

OASIS recommends removal of the stained surface soil. Approximately 1 cubic yard of soil may need to be removed. It is also recommended that a small, lined and bermed containment area be constructed directly beneath the fill connection to catch spills that occur during fueling operations.

5.6 SITE 6: OLD SCHOOL GENERATOR BUILDING

The old school generator building is located directly west of the YFSD tank farm, and south of the school shop and school playground. It is immediately north of the current BTC office.

5.6.1 Site Map/Drawing

Figure 3 shows the building location relative to other site features and structures. Photograph and sampling locations are identified, as well as piping/header locations.

5.6.2 Site Description

The old school generator building is an inactive generator house containing two generators and a 500-gallon diesel fuel day tank. Neither of the generators was connected to a power distribution panel at the time of this site assessment. The 500-gallon day tank has a direct fuel connection to the YFSD tank farm.

Although there have been no documented spills associated with this building, interviews with a local resident indicated that a substantial overfill occurred at the generator day tank during the late 1970's.

5.6.3 Site Reconnaissance

The contact for this site is William Henry.

Visible surface staining was identified underneath and on the northeastern edge of the old generator building during this site assessment.

One test pit was excavated to approximately 7.5 feet below ground surface. The excavations performed for the school tank farm site assessment bound the east side of the building. Obvious contamination and strong diesel odor were present during the test pit excavation. Excavation was halted at this site to minimize the amount of contamination that was brought to the surface. The area is in close proximity to the route that children use to get to the playground.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.6.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 3.

Analytical results for the two samples collected from the test pit near the old school generator building indicate DRO concentrations of 10,600 mg/kg at one foot below ground surface, and 14,600 mg/kg at 7.5 feet below ground surface. A GRO sample that was collected at this site indicates GRO concentrations of 1,600 mg/kg approximately 1 foot below ground surface. BTEX results were non-detect except for xylenes concentrations of 13 mg/kg.

5.6.5 Discussion and Recommendations

The close proximity of this site to the school tank farm effectively makes it part of the same contamination area. Recommendations for this site are identical to the recommendations made for the Cruikshank School Tank Farm.

5.7 SITE 7: WASHETERIA PIPELINE

The washeteria pipeline runs south from the YFSD tank farm to the day tank outside of the eastern side of the washeteria. The actively leaking pipeline joint that was investigated as part of this assessment is located just south of the utilidor that runs along the southern end of the YFSD tank farm. The leaking joint is directly east of the current BTC office building.

5.7.1 Site Map/Drawing

Figure 8 shows pipeline locations relative to other site features and structures. Photograph and sampling locations are identified.

5.7.2 Site Description

The washeteria pipeline is an active pipeline, constructed in the mid 1990s. The pipeline is operated by BTC. Diesel fuel transported in this pipeline is generally used to fill the day tank that serves the washeteria

The pipeline is a 2-inch diameter steel pipeline with threaded couplings. The pipeline runs along the ground surface and across an ATV trail. After crossing the ATV trail to the south of the YFSD, the pipeline runs either at the ground surface or just beneath the ground surface to the washeteria.

There have been no documented spills associated with this pipeline. Conversations with residents indicate that the day tank behind the washeteria in occasionally overfilled.

5.7.3 Site Reconnaissance

The maintenance person for the Beaver Washeteria is George Yatlin, Sr.

Visible surface staining of the soil was apparent at the pipeline joint location indicated in Figure 8. Although this was the only joint investigated, it appears that several joints in the pipeline may also be leaking or have leaked in the past. This pipeline joint location appeared to be the location with the most amount of surface staining. ATVs routinely drive over the top of the pipeline, which is exposed in the ATV trail just south of this pipeline joint.

Five test pits were excavated with a backhoe near the leaking pipeline joint in the washeteria pipeline. Excavation to the east was limited by tree line. The ATV road limited excavations to the south. The BTC office building is directly to the west of the site.

Test pit locations and laboratory analytical sample locations were determined by field screening of soil samples using a PID or a Petroflag® field test kit. Field screening locations are shown in the field notes and field screening results are shown in Table 1.

5.7.4 Analytical Results

Soil sample analytical results are summarized in Table 2. DRO/RRO and GRO/BTEX sample analytical results are also shown on Figure 8.

Laboratory analytical results for this area indicated DRO concentrations ranging from non-detect to 19,800 mg/kg. RRO concentrations range from non-detect to 24.4 mg/kg. GRO/BTEX results indicate GRO concentrations of 810 mg/kg and xylenes concentrations of 16 mg/kg.

5.7.5 Discussion and Recommendations

Analytical results from samples collected at a test pit excavated directly east of the leaking coupling indicate DRO contamination exceeding 18 AAC 75 cleanup levels from 7,250 mg/kg at the ground surface to 1,080 mg/kg at 7 feet below ground surface. GRO levels at this location also exceed 18 AAC 75 cleanup levels. Contamination was also evident at another test pit that was excavated to the west of the leaking coupling. A rough estimate of contamination area is approximately 400 ft^2. The contamination appears to extend downwards at least 7.5 feet, which would lead to an estimate of approximately 110 cubic yards of contaminated soil.

With the levels of contamination shown to be present to 7 feet below ground surface, it is reasonable to expect the contamination to extend vertically to at least 15 feet below ground surface. OASIS recommends soil removal in the contaminated areas to approximately 15 feet below ground surface. At that point, contamination remaining at the bottom of the excavation should be documented. A down gradient well should then be installed to identify migration of contamination to groundwater, if present. Using information obtained from the activities mentioned above, a decision could be made regarding necessity of an in-situ remediation system.

Replacement of the existing threaded connection pipeline is also recommended, as leaks were also evident at other pipeline couplings. The pipeline remains an active method of fuel transfer to the washeteria, and will continue to be a source of contamination if not replaced or repaired.

6 DATA VALIDATION

The analytical results for the soil samples and laboratory quality assurance (QA) and quality control (QC) samples were evaluated in accordance with US Environmental Protection Agency (EPA) data validation guidelines. The data was reviewed to determine the integrity of the reported analytical results and to ensure these results met the established data quality objectives.

A trip blank was collected and submitted along with the soil samples for analysis of gasoline range organic compounds (GRO) and benzene, toluene, ethylbenzene, and mixed xylenes (BTEX). No GRO or BTEX compounds were detected in the associated trip blank sample, indicating that cross contamination did not occur during shipping or sample collection. Method blanks were analyzed with soil samples for each analytical method. No analytes were detected in the method blank samples, indicating that cross contamination did not occur during sample preparation or analysis.

During laboratory analysis, 15 soil samples analyzed for diesel range organic compounds (DRO) and 21 soil samples analyzed for residual range organic compounds (RRO) had surrogate compound recoveries exceeding acceptable control limits. The laboratory adds surrogate compounds to all samples analyzed for polyaromatic hydrocarbons (PAH), GRO/BTEX, and DRO/RRO to evaluate the accuracy of the analysis within each individual sample. The cause of the poor surrogate compound recoveries is attributed to sample matrix effects. The DRO and RRO results have not been significantly biased by the surrogate recovery due to the quantification of multiple compounds present in the various hydrocarbon ranges.

Duplicate sample results were evaluated for analytical precision in accordance with EPA data validation protocols. These results were comparable with two exceptions. Results for DRO in sample OPT1-1 exceeded the 20% relative percent difference (RPD) limit established as a data quality objective for this project. The associated results for the original and duplicate samples have been assigned the qualifier “J” to indicate estimated quantities. Results for analytes naphthalene, pyrene, chrysene, and Benzo[b]fluoranthene in sample PLP1-1 also exceeded the 20% RPD limit. Associated results for the original and duplicate samples have been assigned the qualifier “J” to indicate estimated quantities. Additional analyte recoveries exceeded 20% RPD, but were within three times the practical quantification limit, and have not been qualified.

7 SUMMARY TABLE OF SITES

Site Description	Number of Tanks	Total Capacity (gallons	Facility Status (active/inactive)	Recommendation
Site 1: Cruikshank School Tank Farm	9	57,000	Active	Further Action/Assessment
Site 2: Beaver Joint Utilities Tank Farm	3	30,000	Active	Further Action/Assessment
Site 3: Innuit Store Gasoline Tanks (Airport)	4	3,000	Active	No Further Action/Assessment
Site 4: Abandoned Innuit Store Gasoline Tank	1	10,000	Inactive	No Further Action/Assessment
Site 5: Airport Fill Line Pipeline	-	-	Active	Further Action No Further Assessment
Site 6: Old School Generator Building	1	500	Inactive	Further Action/Assessment
Site 7: Fuel Line From School to Washeteria	-	-	Active	Further Action/Assessment

8 ASSESSMENT/REMEDIATION RECOMMENDATIONS SUMMARY

Site Description	Recommended Action
Site 1: Cruikshank School Tank Farm	Soil removal Monitoring well installation Possible in-situ remediation
Site 2: Beaver Joint Utilities-Electric (BJU-E) Tank Farm	Soil removal Replacement of threaded piping Further assessment of generator building Possible in-situ remediation of soil beneath generator building
Site 3: Innuit Store Gasoline Tanks (Airport)	None
Site 4: Abandoned Innuit Store Gasoline Tank	None
Site 5: Airport Fill Line Pipeline	Soil removal Construct small containment area beneath filling connection
Site 6: Old School Generator Building	Soil removal Monitoring well installation Possible in-situ remediation
Site 7: Fuel Line From School to Washeteria	Soil removal Monitoring well installation Replacement of threaded piping Possible in-situ remediation

Table 1
Field Screening Results
Village of Beaver Site Assessment

Site Description	Screening Location	Screening Number	Sampling Location:	Depth (ft bgs)	PID (ppm)	Petroflag (ppm)	Comments
Airport - Gasoline Tanks	APT1-APT2	#1	APT1-1	1.0	OR*	-	
		#2		4.5	OR*	-	
		#3	APT1-2	5.5	OR*	-	
		#4		5.5	150	-	
		#5		4.0	5	-	
		#6		5.5	6	-	
		#7		5.5	6	-	APT1-3 Collected at this location from 5.0 feet bgs
		#8		4.0	16	-	
		#9		5.5	4	-	
		#10	APT2-1	5.0	5	-	
		#11		5.0	47	-	No odor
		#12		5.0	46	-	No odor
		#13	APT1-4	5.5	4	-	
		#14		3.0	4	-	
		#15	APT1-5	5.5	5	-	
Airport - Pipeline Fill Location	APT3	#1	APT3-1	0.5	607	-	
		#2		3.0	272	-	
		#3		4.0	273	-	
		#4		5.0	51	-	
		#5	APT3-2	7.5	20	-	
		#6		1.0	98	-	
		#7		3.0	6	-	
		#8		5.0	8	-	
		#9	APT3-3	7.5	OR*	-	No odor. Recalibrated PID, Rescreened - See PID#13
		#10		4.0	9	-	
		#11		7.0	64	-	
		#12	APT3-4	7.2	250	-	
		#13		7.5	8	-	
Abandoned Store Gasoline Tank (east pit)	ABT1	#1	ABT1-1	0.5	39	-	
		#2		2.0	OR*	69	Response factor = 2
		#3		2.0	5	-	
		#4		4.0	5	-	
		#5	ABT1-2	7.5	7	-	
Abandoned Store Gasoline Tank (north pit)	ABT2	#1		1.0	386		ABT2-1 Collected at this location from 1.5 feet bgs
		#2		4.0	4		
		#3	ABT2-2	5.0	4		
		#4		1.0	25		
		#5		1.0	489		
		#6		3.0	4		
New Power Plant -Used Oil Area	NPT1	#1		1.0	15	EEEE*	Very dark stained soil
		#2		5.0	1	19	
		#3		5.0	3		
		#4		1.0		65	
New Power Plant - Pipeline Joint Leak	NPT2	#1	NPT2-1	1.5	-	-	Obviously contaminated
		#2	NPT2-2	5.0	-	0	
		#3	NPT2-3	5.0	-	127	
New Power Plant - Southeast Corner	NPT3	#1		1.0	22	-	No hydrocarbon odor
		#2		1.0	3	-	No hydrocarbon odor
		#3		3.0	9	-	NPT3-1 Collected at this location from 5.5 feet bgs

Table 1
Field Screening Results
Village of Beaver Site Assessment

Site Description	Screening Location	Screening Number	Sampling Location:	Depth (ft bgs)	PID (ppm)	Petroflag (ppm)	Comments
		#4		3.0	77	49	NPT3-2 Collected at this location from 5.5 feet bgs
New Power Plant - Northwest Corner	NPT4	#1		1.0	4	-	
		#2		3.0	8	-	
		#3	NPT4-1	5.5	8	-	
School Tank Farm - Northeast Corner East Side	STF1	#1		0.5	406		STF1-1 Collected at this location from 1.0 feet bgs
		#2		2.0	78		
		#3	STF1-2	3.0	11	14	
		#4	STF1-3	6.0	-		
School Tank Farm - Northeast Corner, North Side	STF2	#1		0.5	OR*	104	STF2-1 Collected at this location from 1.0 feet bgs
		#2		2.0	15	-	
		#3	STF2-2	3.0	26	0	
		#4	STF2-3	9.7	-	0	
School Tank Farm - West Side	STF3	#1		0.5	2		
		#2	STF3-1	2.0	661		
		#3		4.0	173		
		#4		6.0	448	731	
		#5	STF3-2	8.5	504		
		#6		8.5	300		
		#7	STF3-3	4.0	4	0	
		#8	STF3-4	8.5		0	
		#9		4.0	374		
		#10		4.0	412		
		#11		7.0	202		
		#12	STF3-5	4.5	5		
		#13		7.0	15		
		#14		8.5	318	1,117	
		#15		3.0	6		
		#16	STF3-6	7.0	37		
		#17		2.0	178		
		#18	STF3-10	5.0	269		
		#19		6.0	7		
		#20		7.0	9	0	Strong hydrocarbon odor to soil
		#21		7.0	265		
		#22		4.0	6		
		#23		6.5	6		
		#24	STF3-7	7.5	211		
		#25	STF3-8	4.0	19		
		#26	STF3-9	7.0	25		
School Tank Farm - Northwest Corner, North Side	STF4	#1		1.0	3		
		#2	STF4-1	4.0	3		
		#3	STF4-2	7.0	2		
School Tank Farm - South Side	STF5	#1		5.0	1		
		#2		4.0	2		
		#3	STF5-1	7.5	3	0	
School Tank Farm - East Side (Hand Excavated)	HTP-1	#1		1.5	98		
	HTP-2	#1		1.0	(>1,000)		
	HTP-2	#2		1.5	(>1,000)		
	HTP-2	#3	HTP-2	3.0	(>1,000)		
	HTP-3	#1		1.5	682		

Table 1
Field Screening Results
Village of Beaver Site Assessment

Site Description	Screening Location	Screening Number	Sampling Location:	Depth (ft bgs)	PID (ppm)	Petroflag (ppm)	Comments
	HTP-3	#2	HTP-3	3.0	(>1,000)		
	HTP-4	#1		1.5	314		
	HTP-4	#2	HTP-4	3.0	(>1,000)		
	HTP-5	#1		1.5	144		
	HTP-5	#2		3.0	86		
	HTP-6	#1		1.5	69		
	HTP-6	#2		3.0	64		
	HTP-7	#1		1.5	159		
	HTP-7	#2		3.0	6		
	HTP-8	#1		0.0	528		
	HTP-8	#2		1.5	(>1,000)		
	HTP-8	#3	HTP-8	3.0	(>1,000)		
	HTP-9	#1		0.0	491		
	HTP-9	#2		1.5	285		
	HTP-9	#3	HTP-9	3.0	(>1,000)		
	HTP-10	#1		1.5	494		
	HTP-10	#2	HTP-10	3.0	527		
	HTP-11	#1		0.5	301		
	HTP-11	#2		1.5	119		
	HTP-11	#3	HTP-11	3.0	29		
	HTP-12		HTP-12	3.0			
Pipeline South of Utilidor - 1st Pit, East of Pipe	PLP1	#1	PLP1-1	1.0	563		
		#2	PLP1-2	4.0	768		
		#3	PLP1-3	7.0	348		
Pipeline South of Utilidor - 2nd Pit, East of Pipe	PLP2	#4		1.0	16		
		#5	PLP2-1	4.0	700	0	No odor
		#6	PLP2-2	7.5	20	69	
Pipeline South of Utilidor - 3rd Pit, East of Pipe	PLP3	#7		1.0	4		
		#8		4.0	9		
		#9	PLP3-1	7.5	4		
Pipeline South of Utilidor - 4th Pit, East of Pipe	PLP4	#10		1.0	26		
		#11		4.0	24		
		#12		7.0	504		Strong hydrocarbon odor
Pipeline South of Utilidor - 5th Pit, East of Pipe	PLP5	#13		1.0	15		
		#14		4.0	10		
		#15		6.0	15		
		#16	PLP5-1	7.0	16	9	
Old School Power Plant - North Side	OPT1-1		OPT1-1	1.0			Strong hydrocarbon odor and staining
	OPT1-2	#1	OPT1-2	7.5	425		
TOTAL NUMBER OF SAMPLES				15.0	52		
NUMBER OF DUPES				2.0	7		

Table 2
Analytical Results Summary
Village of Beaver Site Assessement

Test Pit ID	Sample ID	Date	Depth (ft bgs)	Soil Sample Analytical results in mg/kg						
				GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	Xylenes
Site #1-Cruikshank School Tank Farm										
STF1	STF1-1	7/28/01	1.0		ND (<16.4)	ND (<32.8)				
	STF1-2	7/28/01	3.0		ND (<16.0)	37.5				
	STF1-3	7/28/01	6.0		ND (<9.94)	ND (<19.9)				
STF2	STF2-1	7/28/01	1.0		ND (<16.3)	ND (<32.5)				
	STF2-2	7/28/01	3.0		17.3	ND (<31.6)				
	STF2-3	7/28/01	9.7		ND (<10.1)	ND (<20.2)				
STF3	STF3-1	7/28/01	2.0		**11,100**	ND (<715)				
	STF3-2	7/28/01	8.5	**1,600**	**5,180**	ND (<413)	ND (<1.5)	ND (<3.0)	ND (<3.0)	36
	STF3-3	7/28/01	4.0		ND (<18.7)	46.8				
	STF3-4	7/28/01	8.5		ND (<9.50)	ND (<19.0)				
	STF3-5	7/28/01	4.5		ND (<9.91)	25.2				
	STF3-6	7/28/01	7.0		38.5	ND (<20.4)				
	STF3-7	7/28/01	7.5		**2,420**	991				
	STF3-8	7/29/01	3.0		**475**	2,170				
	STF3-9	7/29/01	7.0		35.5	135				
	STF3-10	7/28/01	5.0		**636**	33.4				
STF4	STF4-1	7/29/01	4.0		38.7	50.3				
	STF4-2	7/29/01	7.0		13.3	22.7				
STF5	STF5-1	7/29/01	5.0		ND (<9.86)	ND (<19.7)				
HTP	HTP-2	7/29/01	3.0		**19,000**	ND (<1,230)				
	HTP-3	7/29/01	3.0		**17,000**	ND (<2,320)				
	HTP-4	7/29/01	3.0		**9,270**	ND (<654)				
	HTP-8	7/29/01	3.0		**13,400**	ND (<1,770)				
	HTP-9	7/29/01	3.0		**6,240**	ND (<667)				
	HTP-10	7/29/01	3.0		**5,530**	ND (<654)				
	HTP-11	7/29/01	3.0		ND (<16.2)	45.5				
	HTP-12	7/29/01	3.0		19	65.5				
Site #2-Beaver Joint Utilities-Electric Tank Farm										
NPT1	NPT1-1	7/27/01	1.0		**6,440**	**59,200**				
	NPT1-2	7/27/01	5.0		ND (<20.8)	63.7				
	NPT1-3	7/27/01	1.0		201	2,270				
	NPT1-4	7/27/01	1.0		19.3	105				
	NPT1-5	7/27/01	1.0		60.2	350				
NPT2	NPT2-1	7/27/01	1.5	**770**	**36,400**	ND (<2,890)	ND (<3.4)	ND (<6.8)	ND (<6.8)	68
	NPT2-2	7/27/01	5.0		33.8	39.4				
	NPT2-3	7/27/01	5.0		51.8	165				
NPT3	NPT3-1	7/27/01	5.5		ND (<16.2)	34.5				
	NPT3-2	7/27/01	5.5		ND (<14.8)	ND (<29.5)				
NPT4	NPT4-1	7/28/01	5.5		ND (<17.2)	ND (<34.5)				
Site #3-Innuit Store Gasoline Tanks (Airport)										
APT1	APT1-1	7/26/01	1.0	410	64.7	ND (<43.0)	ND (<.29)	7.7	15	69
	APT1-2	7/26/01	5.5	8.1			ND (<.02)	0.17	0.44	1.23
	APT1-3	7/26/01	5.6	ND (<5.0)			ND (<.025)	ND (<.05)	ND (<.05)	ND (<.05)
	APT1-4	7/26/01	5.5	ND (<4.2)			ND (<.021)	ND (<.042)	0.13	0.1
	APT1-5	7/26/01	5.5	ND (<5.0)			ND (<.025)	ND (<.05)	ND (<.05)	ND (<.05)
APT2	APT2-1	7/26/01	5.0	ND (<3.8)			ND (<.019)	ND (<.038)	0.1	ND (<.038)
Site #4-Abandoned Innuit Store Gasoline Tank										
ABT1	ABT1-1	7/27/01	2.0	ND (<5.6)	ND (<23.4)	ND (<46.8)	ND (<.028)	ND (<.056)	ND (<.056)	ND (<.056)
	ABT1-2	7/27/01	7.5	ND (<3.0)			ND (<.015)	ND (<.03)	ND (<.03)	ND (<.03)
ABT2	ABT2-1	7/27/01	1.5	ND (7.0)			ND (<.035)	ND (<.07)	ND (<.07)	ND (<.07)
	ABT2-2	7/27/01	5.0	ND (<2.2)			ND (<.011)	ND (<.022)	ND (<.022)	ND (<.022)
Site #5-Airport Fill Line										
APT3	APT3-1	7/27/01	0.5	270			ND (<1.0)	ND (<2.1)	ND (<2.1)	ND (<2.1)
	APT3-2	7/27/01	7.5		36.5	ND (<21.1)				
	APT3-3	7/27/01	7.5		ND (<10.4)	ND (<20.7)				
	APT3-4	7/27/01	7.2		37.7	ND (<20.3)				
Site #6-Old School Generator Building										
OPT1	OPT1-1	7/29/01	1.0	1600	**10,600**	ND (<1,130)	ND (<2.0)	ND (<4.0)	ND (<4.0)	34
	OPT1-2	7/29/01	7.5		**4,670**	ND (<397)				

Table 2
Analytical Results Summary
Village of Beaver Site Assessement

Test Pit ID	Sample ID	Date	Depth (ft bgs)	Soil Sample Analytical results in mg/kg						
				GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	Xylenes
PLP1	PLP1-1	7/29/01	1.0	**810**	**7,250**	ND (<618)	ND (<2.0)	ND (<4.1)	ND (<4.1)	16
	PLP1-2	7/29/01	4.0		**19,800**	ND (<1,660)				
	PLP1-3	7/29/01	7.0		**1,080**	ND (<103)				
PLP2	PLP2-1	7/29/01	4.0		ND (<10.7)	24.4				
	PLP2-2	7/29/01	7.5		156	ND (<19.9)				
PLP3	PLP3-1	7/29/01	7.5		19.1	ND (<19.7)				
PLP4	No samples collected									
PLP5	PLP5-1	7/29/01	7.0		ND (<9.98)	ND (<20.0)				

* Analytical results shown in red exceed 18AAC75 Method Two Cleanup Levels.

** "X" indicates analytical results that have not been received from the laboratory.

*** A blank cell indicates that a location was not sampled for that analyte.

Table 3
PAH Analytical Results Summary
Village of Beaver Site Assessment

Sample Location: **Sample Depth (feet):**	**ADEC Method Two Soil Cleanup Standards**	**HTP-2** **3.0**	**PLP1-1** **1.0**	**OPT1-1** **1.0**	**NPT2-1** **1.5**	**APT1-1** **1.0**
Naphthalene	**43**	38.70000	0.48500	7.83000	63.80000	0.60300
Acenaphthylene	**NE**	0.00723 (U)	0.00607 (U)	0.00627 (U)	0.00998 (U)	0.00689 (U)
Anthracene	**4,300**	0.08900	0.01210	0.00627 (U)	0.20000 (U)	0.00689 (U)
Fluoranthene	**2,100**	0.89900	0.13200	0.01190	0.00998 (U)	0.00689 (U)
Pyrene	**1,500**	0.61500	0.08910	0.01350	0.00998 (U)	0.00689 (U)
Chrysene	**620**	0.10100	0.08650	0.00627 (U)	0.00998 (U)	0.00689 (U)
Benzo(b)fluoranthene	**20**	0.03490	0.05980	0.00627 (U)	0.00998 (U)	0.00689 (U)
Benzo(k)fluoranthene	**200**	0.01160	0.01360	0.00627 (U)	0.00998 (U)	0.00689 (U)
Benzo(a)pyrene	**3**	0.00755	0.00675	0.00627 (U)	0.00998 (U)	0.00689 (U)
Acenaphthene	**210**	0.00723 (U)	0.00607 (U)	0.00627 (U)	0.00998 (U)	0.00689 (U)
Fluorene	**270**	0.00723 (U)	0.00607 (U)	0.32100	0.00998 (U)	0.00861
Benzo(g,h,i)perylene	**NE**	0.00723 (U)	0.00607 (U)	0.00627 (U)	0.00998 (U)	0.00689 (U)
Phenanthrene	**NE**	0.50500	0.24200	0.05220	2.000 (U)	0.00689 (U)
Benzo(a)anthracene	**6**	0.08570	0.03280	0.00627 (U)	0.00998 (U)	0.00689 (U)
Indeno(1,2,3-cd)pyrene	**54**	0.00723 (U)	0.00607 (U)	0.00627 (U)	0.00998 (U)	0.00689 (U)
Dibenzo(a,h)anthracene	**6**	0.00723 (U)	0.00607 (U)	0.00627 (U)	0.00998 (U)	0.00689 (U)

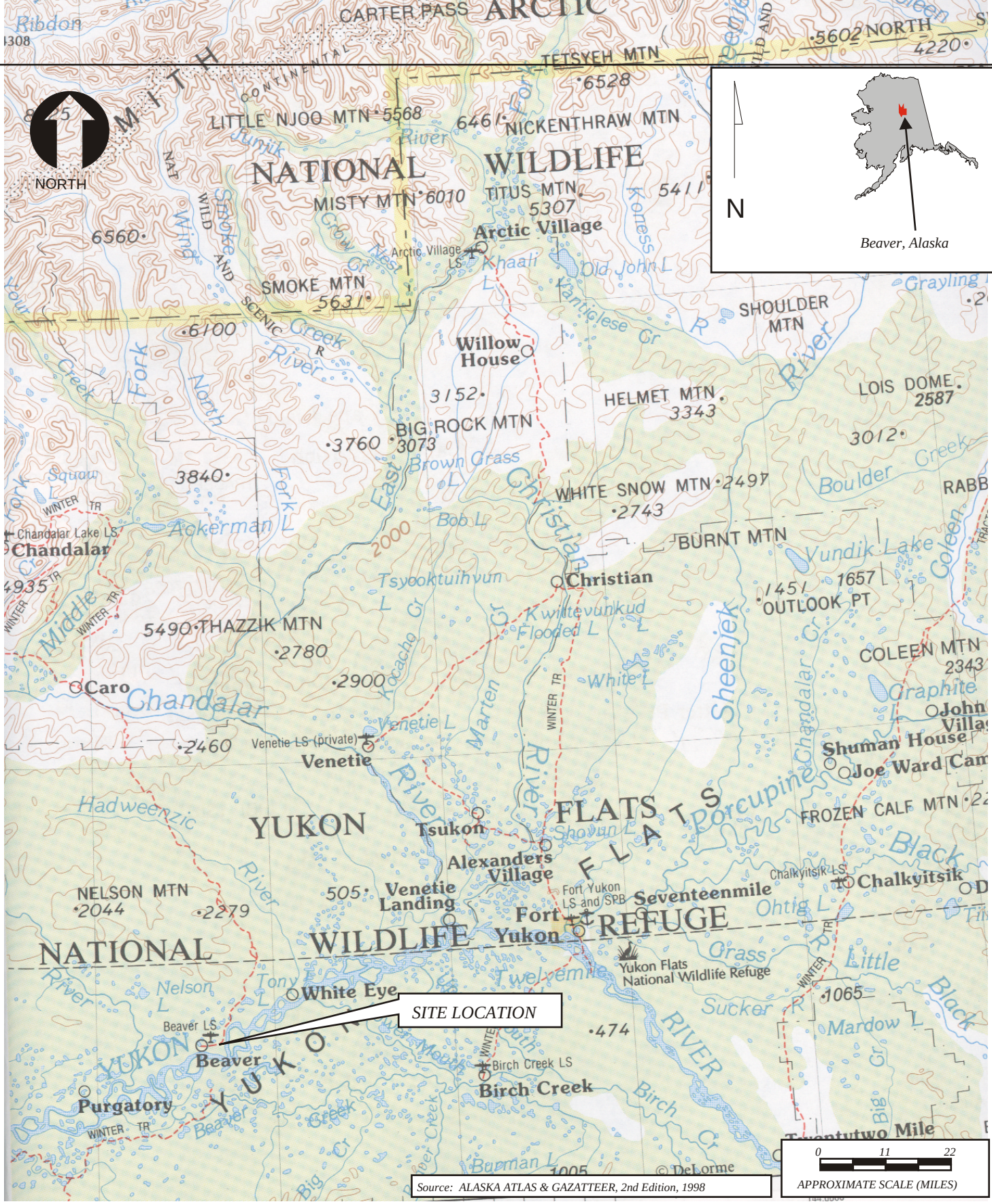
Notes: All results reported in mg/Kg - unless otherwise specified

mg/kg - Miligram per Kilogram

NE - Not Established

PAH - Polynuclear Aromatic Hydrocaron

12,000 (U) - Not detected at or above method reporting limits indicated



DATE: Aug 2001 CHECKED BY: KDH DRAWN: NPO PROJECT: 14-007 FILE NUMBER: SiteLocationMap.CDR	oasis ENVIRONMENTAL 807 'G' Street, Suite 250 Anchorage, AK. 99501 (907) 258-4880 Fax (907) 258-4033	SITE LOCATION MAP Beaver, Alaska	FIGURE 1

PROJECT MGR: K. Hill

DRAWN BY: K. Hill

CHECKED BY: M. Schwenne

oasis ENVIRONMENTAL
807 'G' Street, Suite 250
Anchorage, AK. 99501
(907) 258-4880 Fax (907) 258-4033

SITE VICINITY MAP

BEAVER, ALASKA
ADEC UST PROGRAM

FIGURE

2

SCHOOL SHOP

SHACK

OPT1-1 (1'bgs)
DRO = 10,600 mg/kg
RRO = ND (<1,130 mg/kg)
GRO = 1,600 mg/kg
PAH = See Table 3
B = ND (<2.0 mg/kg)
T = ND (<4.0 mg/kg)
E = ND (<4.0 mg/kg)
X = 13 mg/kg
OPT1-2 (7.5'bgs)
DRO = 14,600 mg/kg
RRO = ND (<2,020 mg/kg)

AREA #6

PIPELINE

OLD SCHOOL
GENERATOR
BUILDING

STF3-8 (3'bgs)
DRO = 475 mg/kg
RRO = 2,170 mg/kg
STF3-9 (7'bgs)
DRO = 35.5 mg/kg
RRO = 135 mg/kg

STF3-7 (7.5'bgs)
DRO = 2,420 mg/kg
RRO = 991 mg/kg

No sample collected
Contamination obvious at
6' and 7' bgs

STF3-10 (5'bgs)
DRO = 636 mg/kg
RRO = 33.4 mg/kg

No sample collected
Contamination obvious at
6' and 7' bgs

No sample collected
Contamination obvious at
4' and 7' bgs

No sample collected
Contamination obvious at
4' bgs

STF3-6 (7'bgs)
DRO = 38.5 mg/kg
RRO = ND (<20.4 mg/kg)

STF3-5 (4.5'bgs)
DRO = ND (<9.91 mg/kg)
RRO = 25.2 mg/kg
Obvious contamination
at 8.5' bgs

STF3-1 (2'bgs)
DRO = 11,100 mg/kg
RRO = ND (<715 mg/kg)
STF3-2 (8.5'bgs)
DRO = 5,180 mg/kg
RRO = ND (<413 mg/kg)
GRO = 1,600 mg/kg
B = ND (<1.5 mg/kg)
T = ND (<3.0 mg/kg)
E = ND (<3.0 mg/kg)
X = 36 mg/kg

No sample collected
Contamination obvious at
8.5' bgs

STF3-3 (4'bgs)
DRO = ND (<18.7 mg/kg)
RRO = 46.8mg/kg
STF3-4 (8.5'bgs)
DRO = ND (<9.50 mg/kg)
RRO = ND (<19.0 mg/kg)

STF5-1 (5'bgs)
DRO = ND (<9.98 mg/kg)
RRO = ND (<20.0 mg/kg)

STF2-1 (1'bgs)
DRO = ND (<16.3 mg/kg)
RRO = ND (<32.5 mg/kg)
STF2-2 (3'bgs)
DRO = 17.3 mg/kg
RRO = ND (<31.6 mg/kg)
STF2-3 (9.7')
DRO = ND (<10.1 mg/kg)
RRO = ND (<20.2 mg/kg)

STF4-1 (4'bgs)
DRO = 38.7 mg/kg
RRO = 50.3 mg/kg
STF4-2 (7'bgs)
DRO = 13.3 mg/kg
RRO = 22.7 mg/kg

#1 #2 #3
#4 #5
#6 #7
#8 #9

No sample collected
No contamination
evident

No sample collected
No contamination
evident

STF1-1 (1'bgs)
DRO = ND (<16.4 mg/kg)
RRO = ND (<32.8 mg/kg)
STF1-2 (3'bgs)
DRO = ND (<16.0 mg/kg)
RRO = 37.5 mg/kg
STF1-3 (6')
DRO = ND (<9.94 mg/kg)
RRO = ND (<19.9 mg/kg)

FROM AIRPORT

TO SCHOOL

HTP- 2 (3'bgs)
DRO = 19,000 mg/kg
RRO = ND (<1230 mg/kg)
PAH = See Table 3

HTP- 8 (3'bgs)
DRO = 13,400 mg/kg
RRO = ND (<1,770 mg/kg)

HTP- 3 (3'bgs)
DRO = 17,000 mg/kg
RRO = ND (<2320 mg/kg)

HTP- 9 (3'bgs)
DRO = 6,240 mg/kg
RRO = ND (<667 mg/kg)

HTP- 4 (3'bgs)
DRO = 9,720 mg/kg
RRO = ND (<654 mg/kg)

HTP- 10 (3'bgs)
DRO = 5,530 mg/kg
RRO = ND (<654 mg/kg)

No sample collected
No contamination
evident

HTP- 11 (3'bgs)
DRO = ND (<16.2 mg/kg)
RRO = 45.5 mg/kg

HTP- 12 (3'bgs)
DRO = 19.0 mg/kg
RRO = 65.5 mg/kg

TREE LINE

DISCONNECTED
PIPELINE

UTILIDOR

NORTH

APPROXIMATE AREA OF
CONTAMINATION

SOIL EXCAVATION AREAS

0 10 20 30

APPROXIMATE SCALE IN FEET

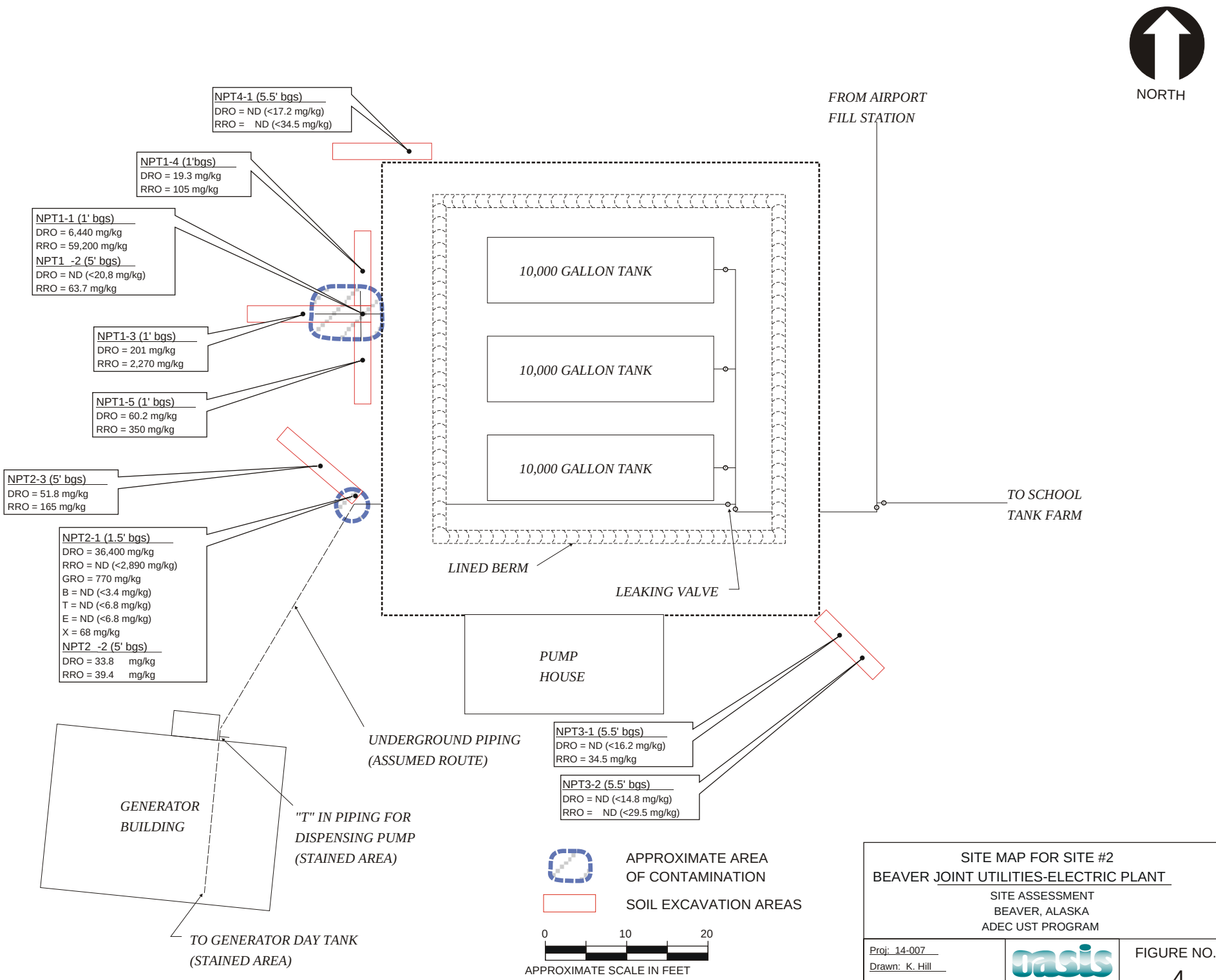
SITE MAP FOR SITES #1 AND #6
SCHOOL TANK FARM
AND OLD SCHOOL GENERATOR HOUSE

SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
3

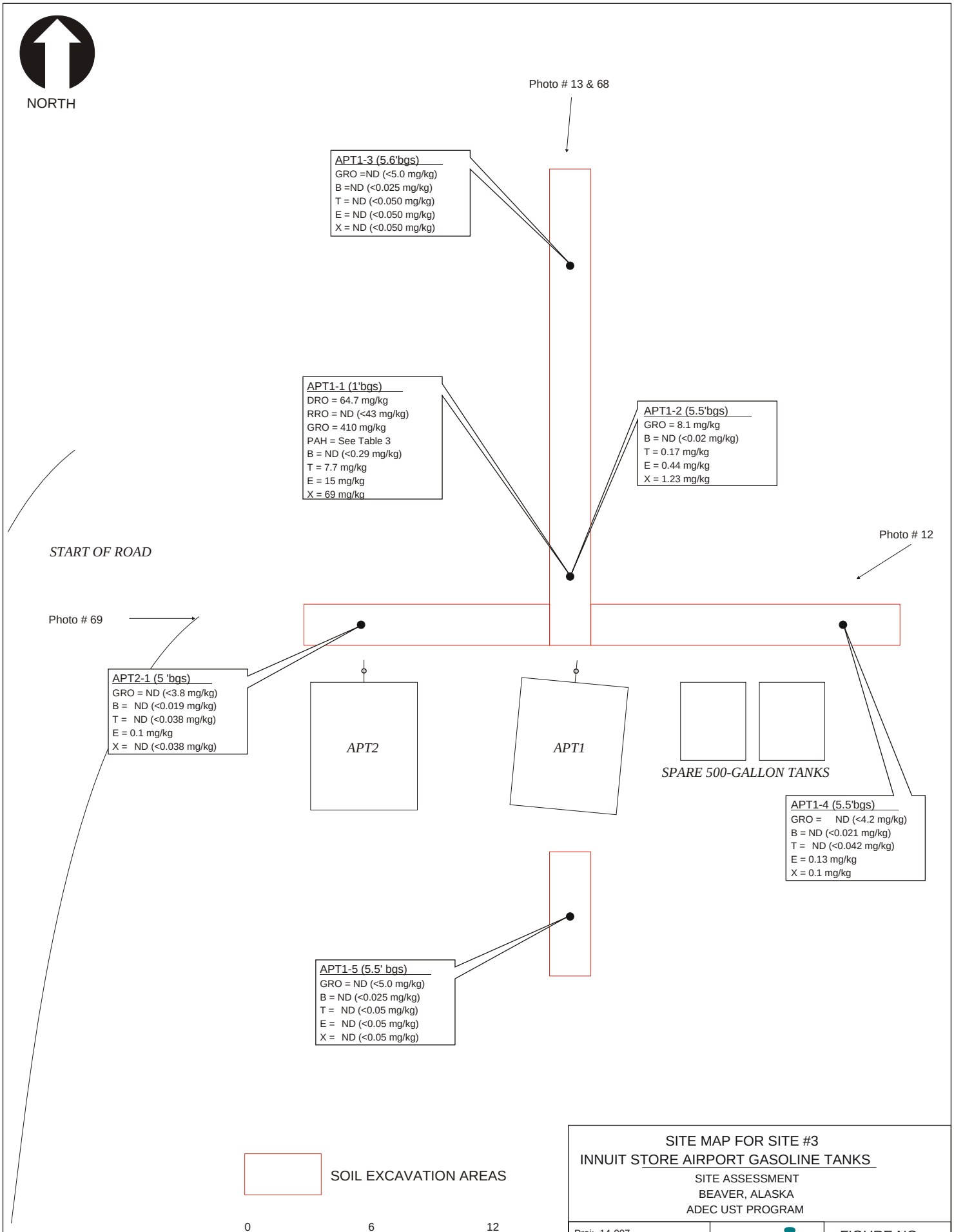


SITE MAP FOR SITE #2
BEAVER JOINT UTILITIES-ELECTRIC PLANT
SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
4

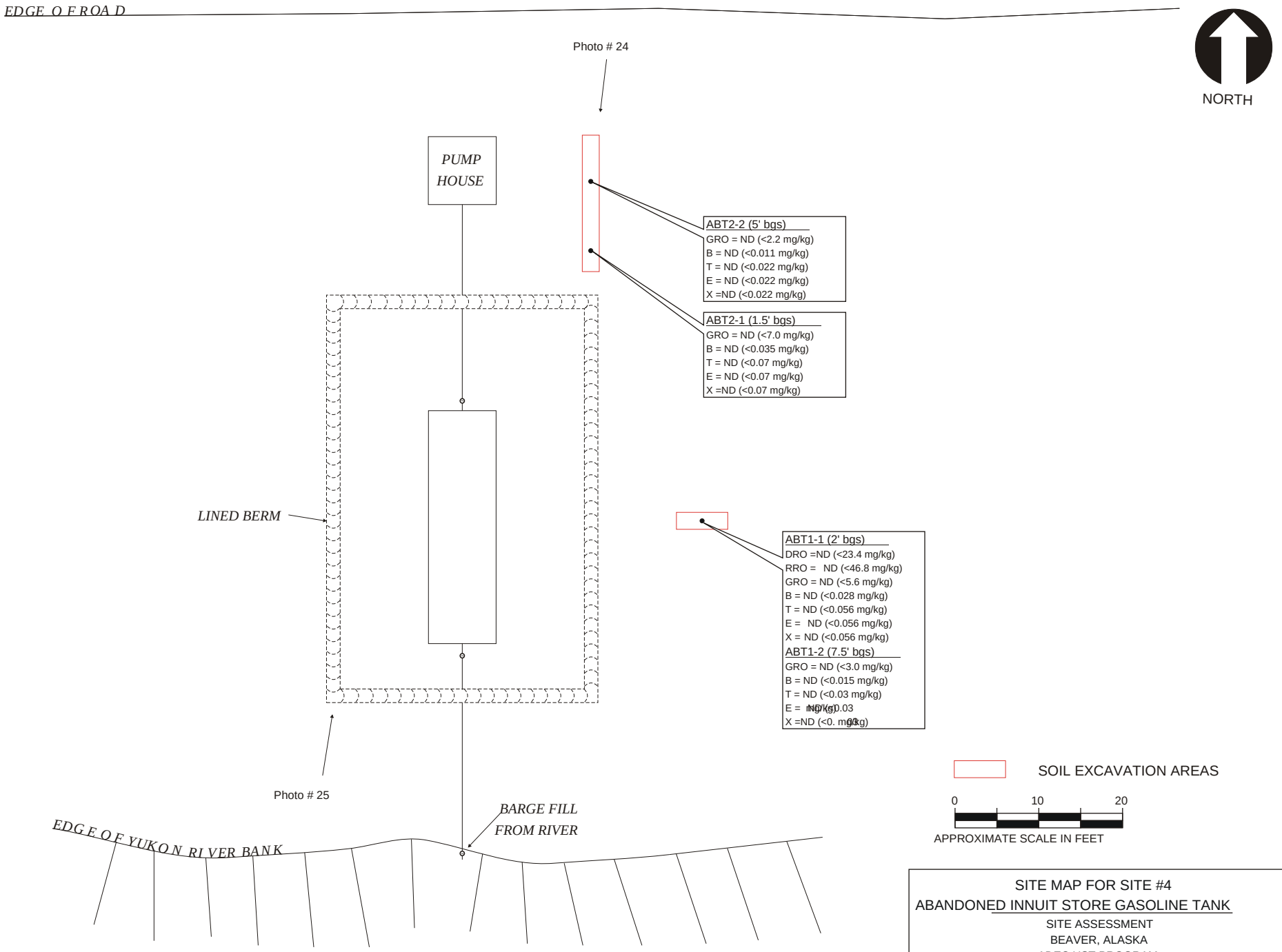


SITE MAP FOR SITE #3
INNUIT STORE AIRPORT GASOLINE TANKS
SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
5

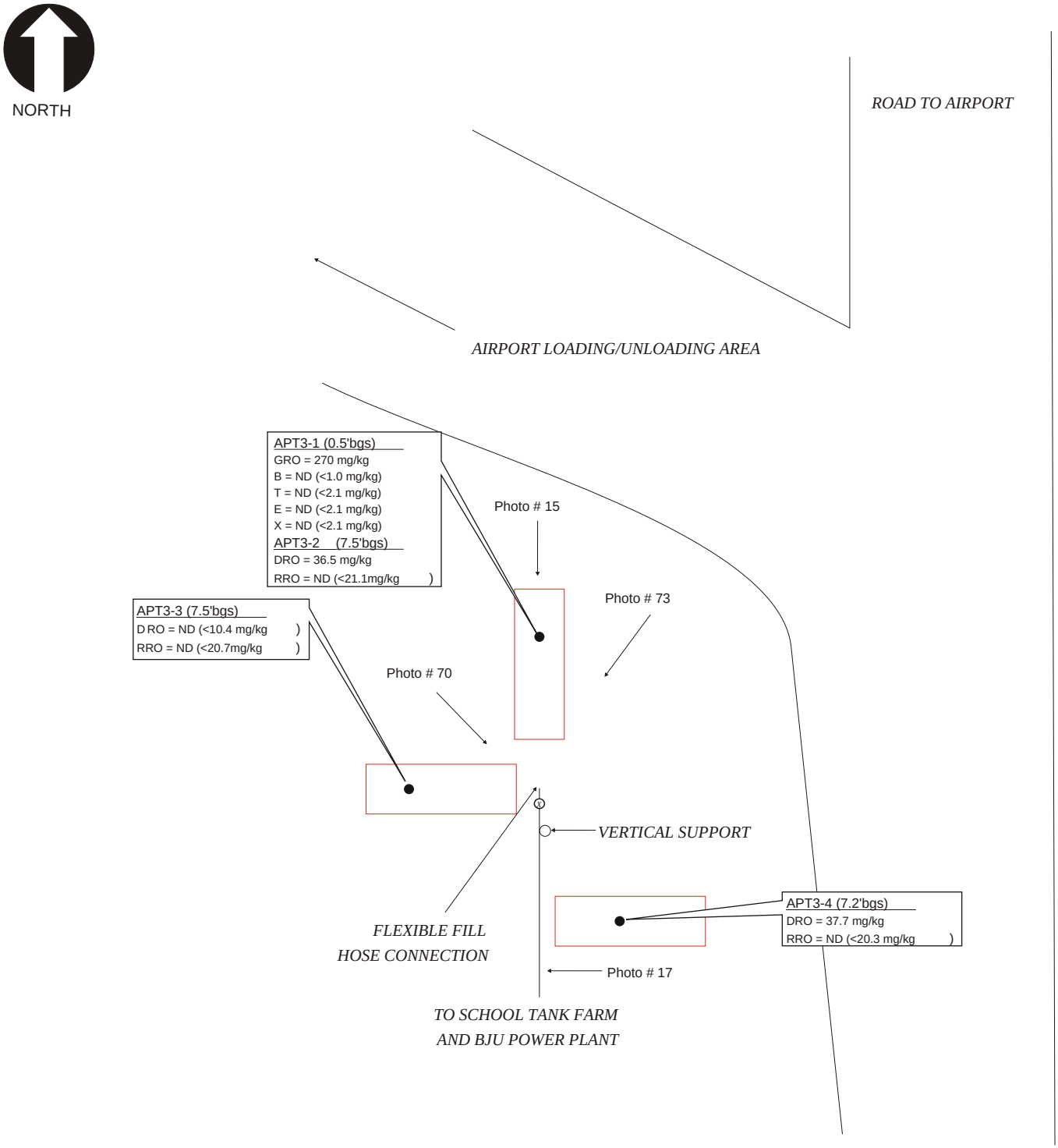


SITE MAP FOR SITE #4
ABANDONED INNUIT STORE GASOLINE TANK
SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
6



SOIL EXCAVATION AREAS

0 6 12

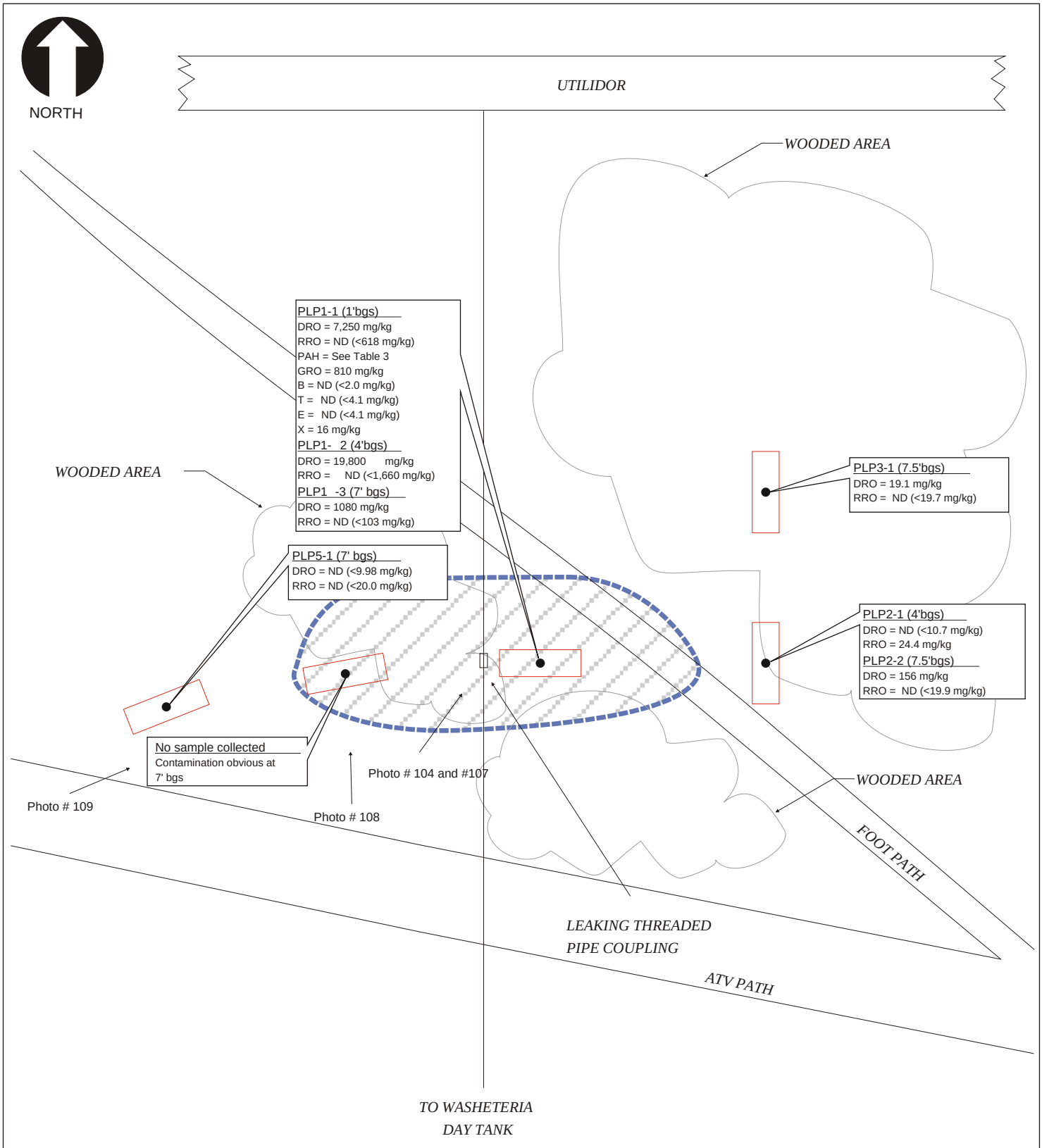
APPROXIMATE SCALE IN FEET

SITE MAP FOR SITE #5
AIRPORT DIESEL FILL LINE
SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
7



SITE MAP FOR SITE #7
WASHETERIA FUEL LINE
SITE ASSESSMENT
BEAVER, ALASKA
ADEC UST PROGRAM

Proj: 14-007
Drawn: K. Hill
Checked: M. Schwenne

oasis ENVIRONMENTAL

FIGURE NO.
8

Appendix A

Field Notes

7/23/01

0700 - Plane to Fairbanks

1100 - Plane from Fairbanks to Beaver

1300 - Arrived at Beaver
- Met with Paul Williams Sr. and Richard Williams
- Discussed meeting time to perform initial tank visits

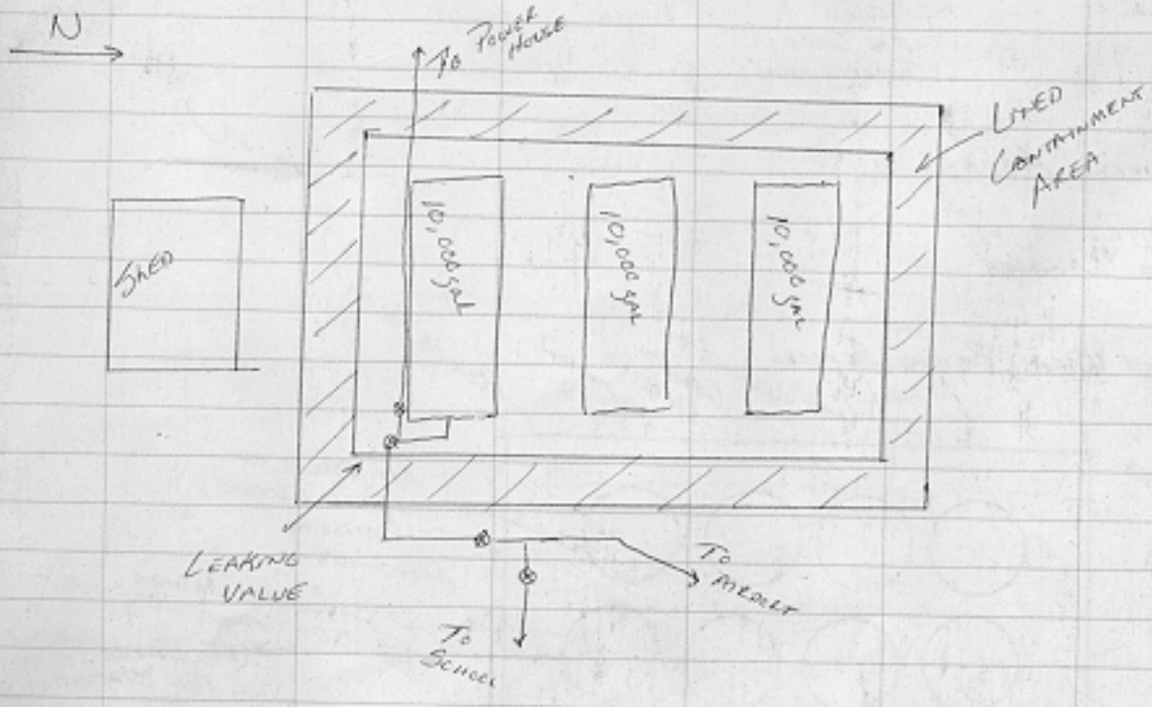
1330 - Moved Field Gear From Council Building to Cabin

1400 - Began working to get Richard Williams Set up on the internet to get his 8-hour Refresher Course
- Couldn't find a fast enough Connection to Support the online training (Talked to Max for Support)

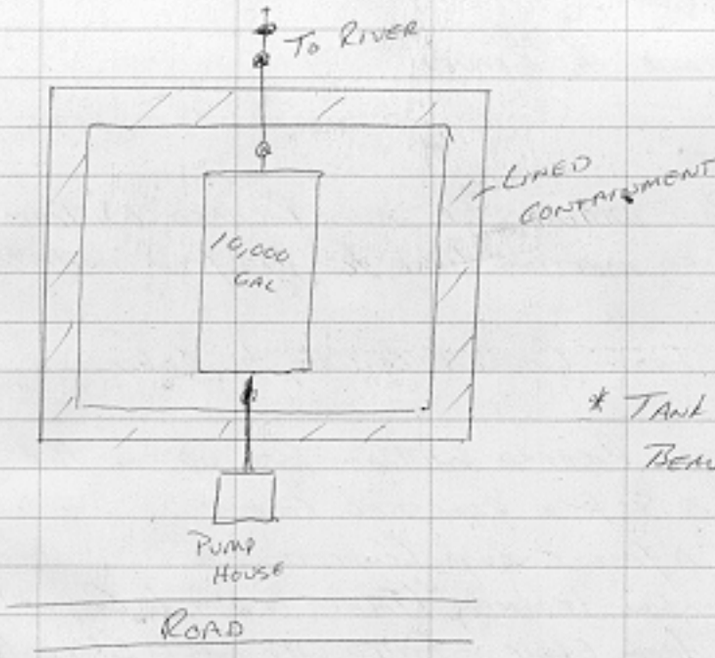
1500 - Rented 4-wheeler from Elsie - Filled with Gas @ Store (5 gal for $15)

1530 - Decided to Send Richard Williams to Fairbanks to complete his training.
- talked to Pete Wallace at Tanana Chiefs Conference (He has internet fast enough to Support the training)
- Council will pay for Richards flight to Fairbanks

1600 - Met with Paul & Richard Williams to visit tank sites

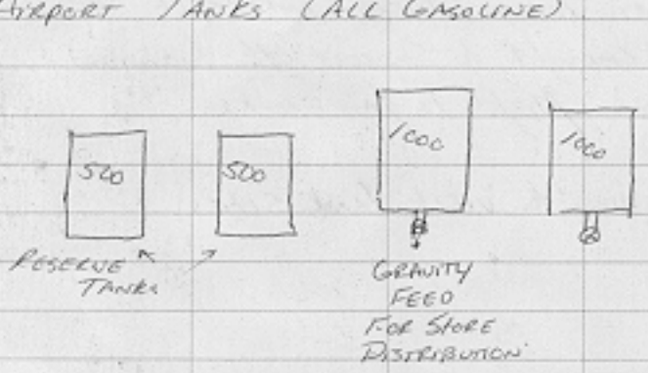


1615 - Abandoned 10,000 Gal Tank

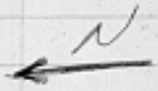


* Tank Belongs to Beaver Corporation

1630 - Airport Tanks (All Gasoline)

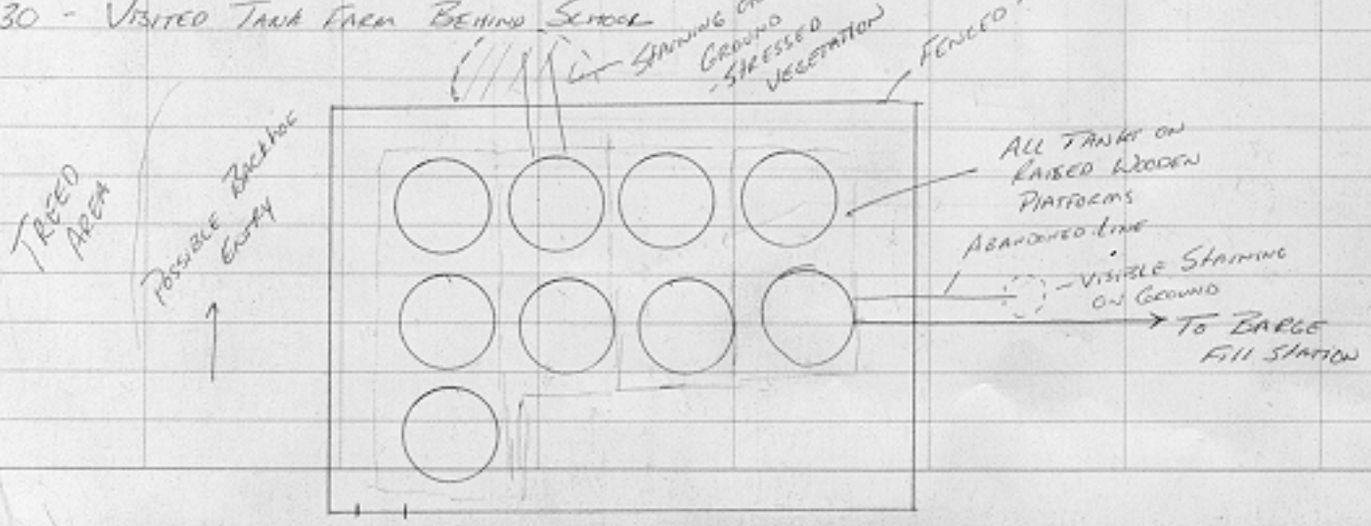


* No Containment Area



1730 - Books for Dinner

1830 - Visited Tank Farm Behind School



7/23/01

1900 - Collaborated Field Notes

- Worked on Laptop to determine mapping Strategy

Hours: 1 (2)

Nathan P. Olk

7/24/01

0730 - Discussed Workplan and Plan for the Day

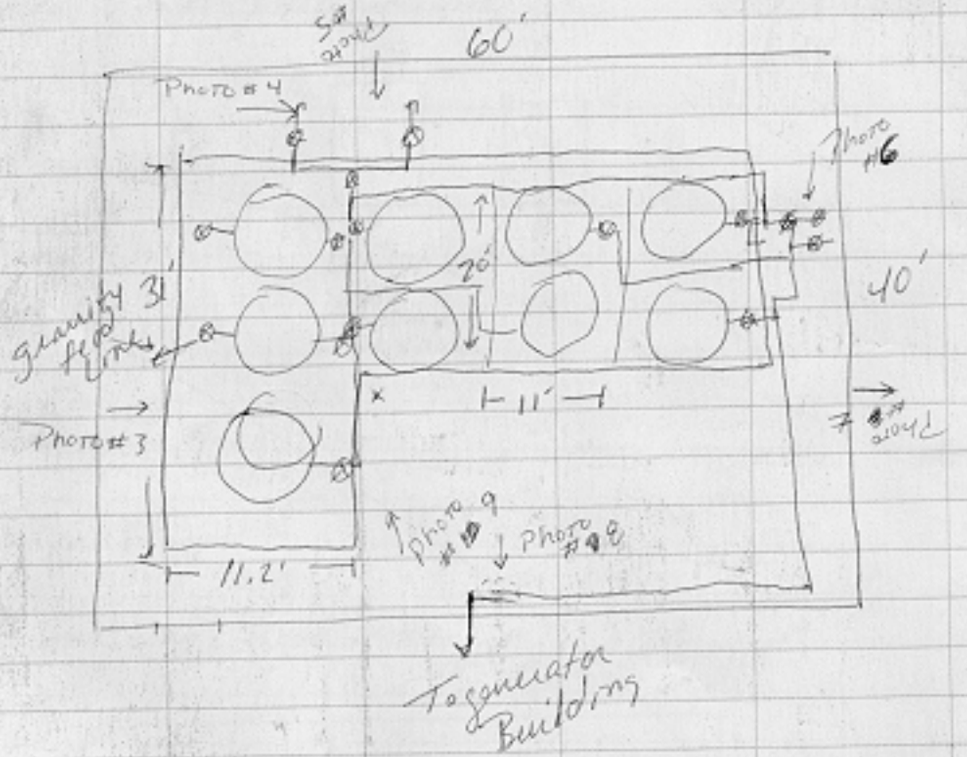
0830 - Arrive at Tribal Council Building

- Talked w/ Max
  - Said not to do Post Office Tanks

- He will get on touch with Pete Wallace @ TCL to arrange payment for Richard Williams

- Richard Williams left for Fairbanks on 9:30 flight

0900 - School Tank Farm

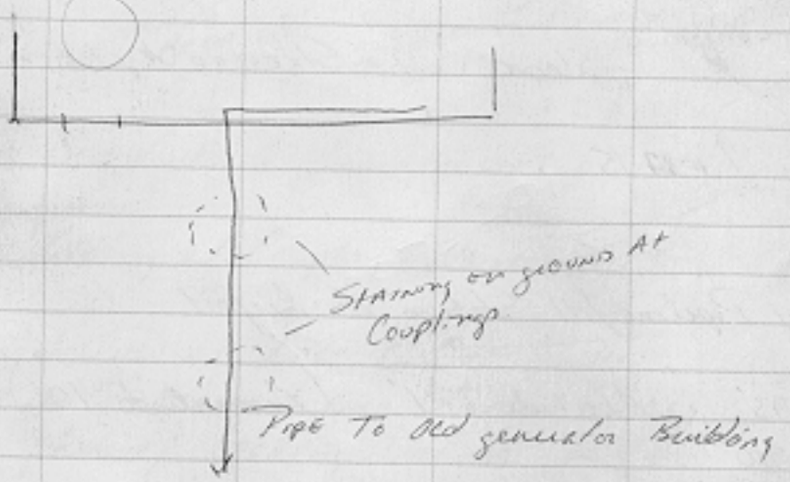


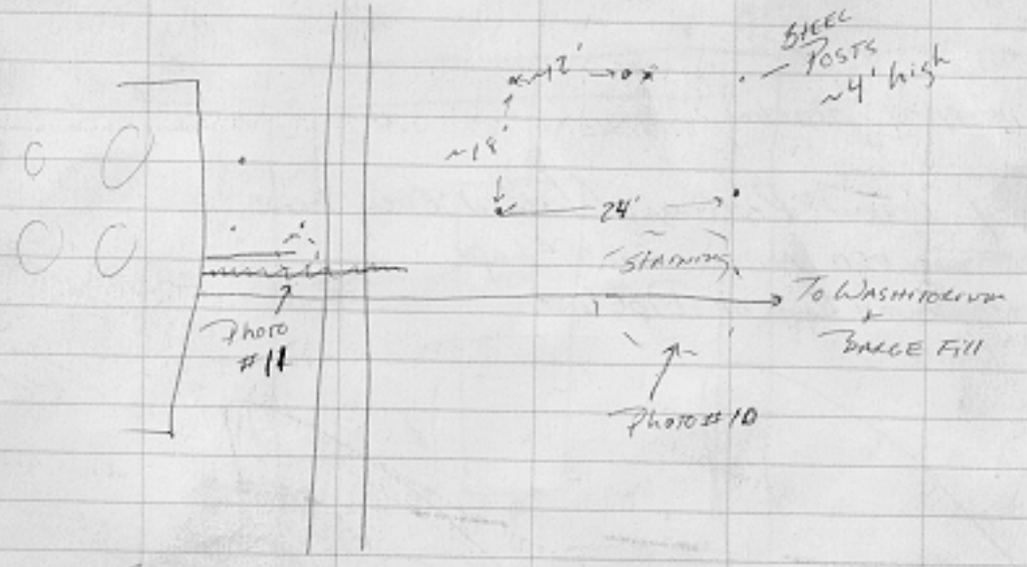
7/24/01

Photo #3 = Blue fill line to Equipment Shed
#4 = Piping w/ Stressed Vegetation on NE Side of Tanks
#5
6
7
#7
#8 = Leaking Joint in Line to Old Generator house
#9 = Leaking Pipe / Coffee Can

1040 GPS Coordinates of Center of Shell Tank Farm
GPS – N 66° 21.585' (Within 14')
W 47° 23.805'

1045 -

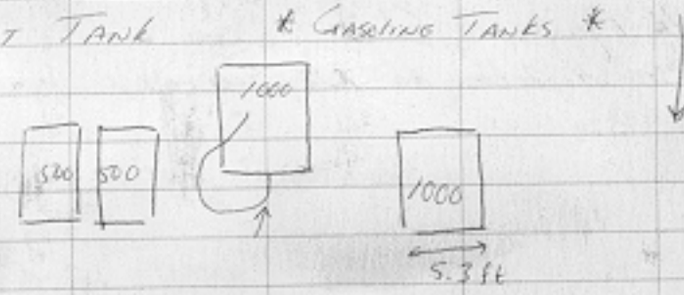




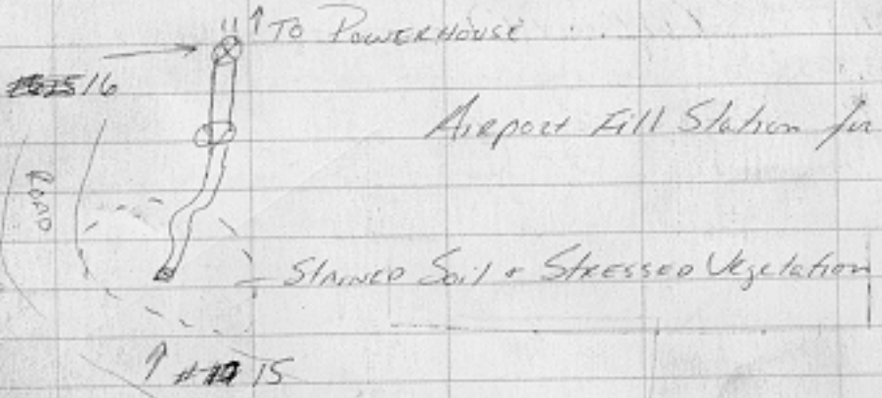
#10 - Stained Area @ Coupling
#11 - End of Abandoned Pipe (Staining)

7/24/01

1110 - Airport Tank * Gasoline Tanks *



1115 - Photo #15/16



GPS Coordinates of Pipeline fill Station at Airport

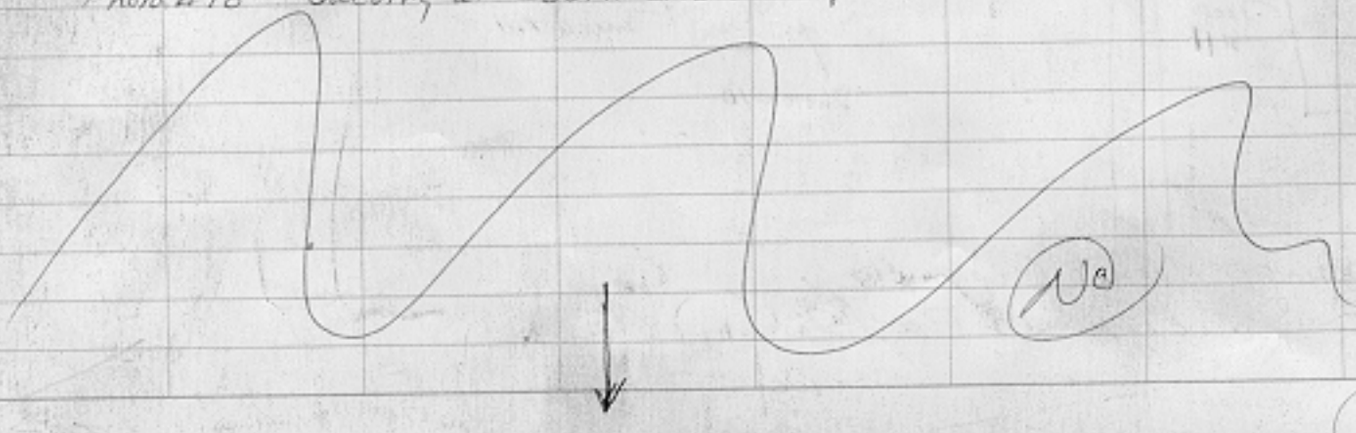
N 66° 21.693' Altitude 394' (Accurate to 10')
W 147° 23.910'

1130 - Photo #17

Welded Join on Airport pipeline

- Walked Length of Airport Pipeline, Checked Every Joint
- All Joints Are welded and in Good Shape

Photo #18 - Valving at South End of Pipeline



7/24/01

1300

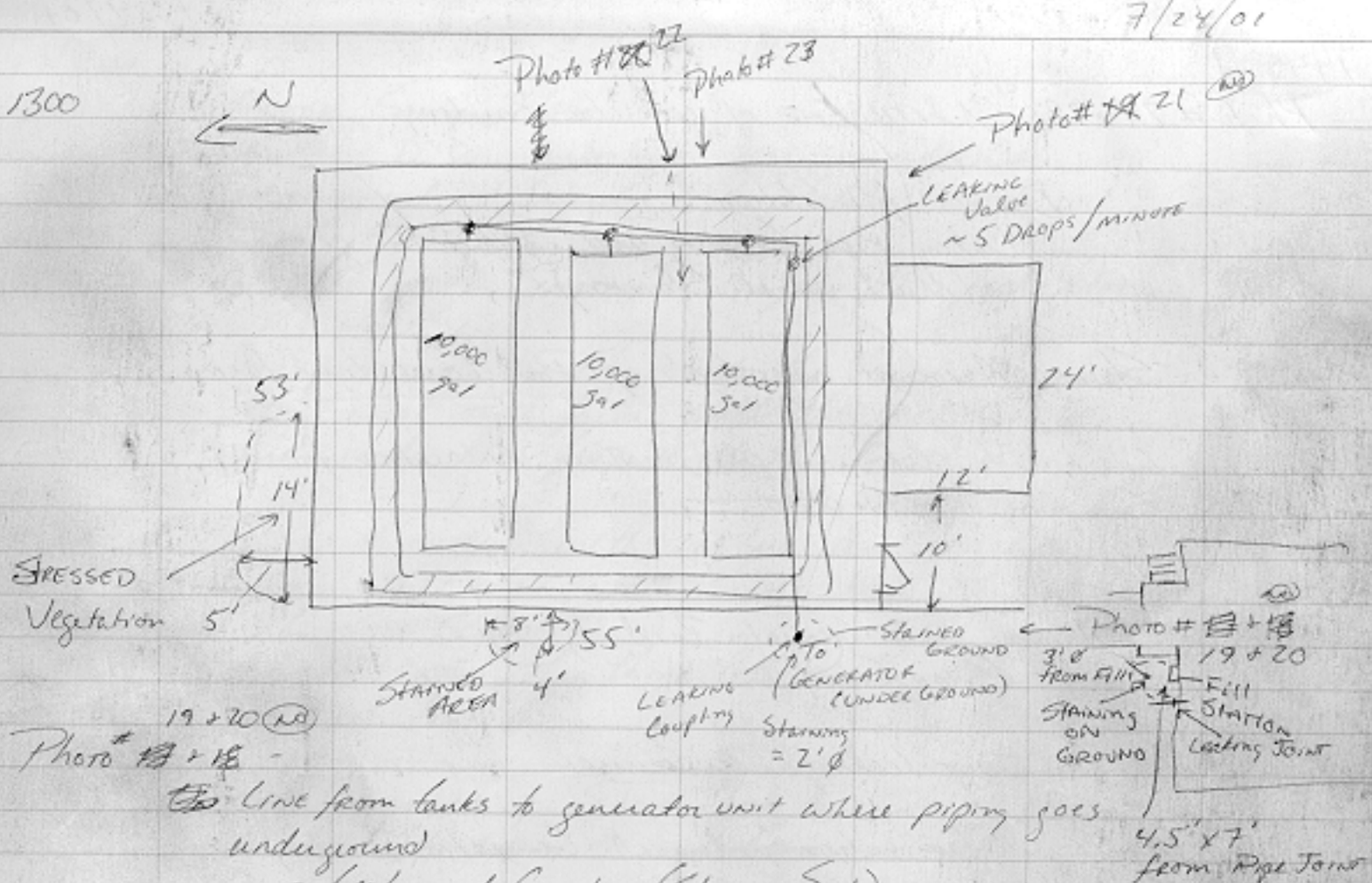


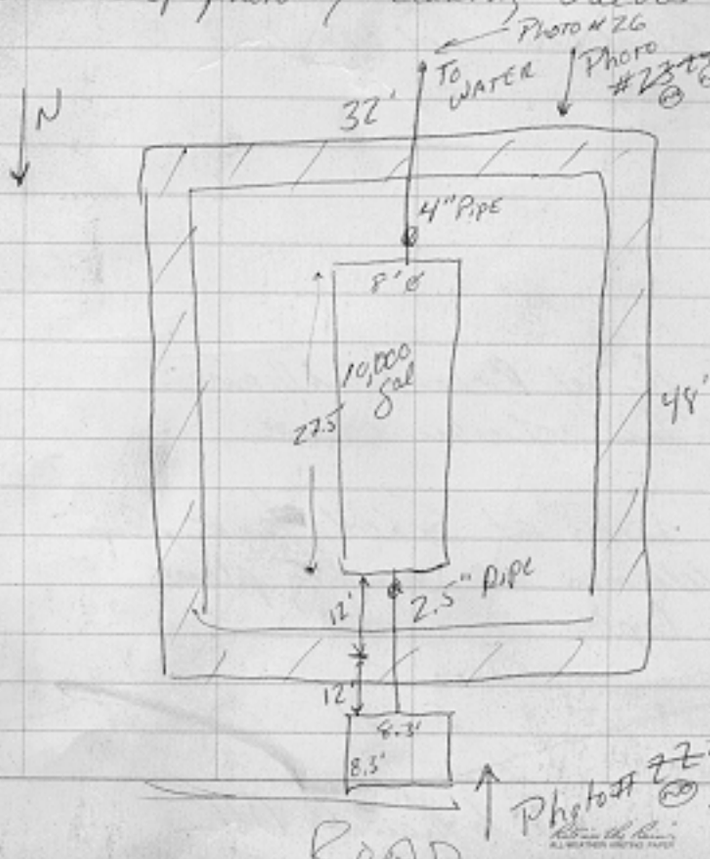
Photo # 19 & 20 (NB)

- Line from tanks to generator unit where piping goes underground
- Leaking at Coupling (Stained Soil)

Photo #22 - Leaking Valves at East End of tanks
Liquid in Containment area between tanks

Photo #23 - Closeup photo of Leaking Valves

1400 -



Tank Dimensions
8' ø x 27'½ ft

~~Photo #27~~
Photo #26 - Closeup of Barge fill Valve

* No Stained areas apparent due to overgrown Vegetation

7/24/01

1445 -
Photo # 27 & 28 North End of generator Building

Diesel fill Station
- Leaking Pipe Coupling and Spillage on ground
(Much visible Staining)

1500 -
Photo # 29 - Stained Area at west Side of Powerhouse tank farm

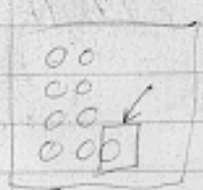
- Worked to determine areas where excavation for Sampling would occur.

1570 -
Photo # 30 Staining under Generator Building
(South Side)

Photo # 31 Pipe Joints leaking under Generator building

- Visible Contamination underneath Generator Building from leaking pipe Joints
(Pipe comes from tank farm and goes to generators)

1545 - Talked with Wilma Henry (Maintenance Person for School)
- found that Steel posts by School tanks were used to chain dogs
- Southernmost tank at School has not been used in five years due to leaking Joints



1555 - Spoke with Pete Wallace to get Richard Williams Set up on the internet for refresher course

1605 - Determined Sample Pit areas at School tank farm
1630 - Compiled information to determine Site Sampling plans
1730 - Download digital pictures to laptop

10 hours

Nathan D. Ohl

(8)

7/25/01

0730 - Confirmed Sampling plan
- Count to be sure number of jars is adequate for amount of samples to be taken.

0900 - Karl talked with Samson Peters from the Fort Yukon School District
- Got permission to dig outside the fence at the School tank farm with the back-hoe and inside the fence with the Shovel.

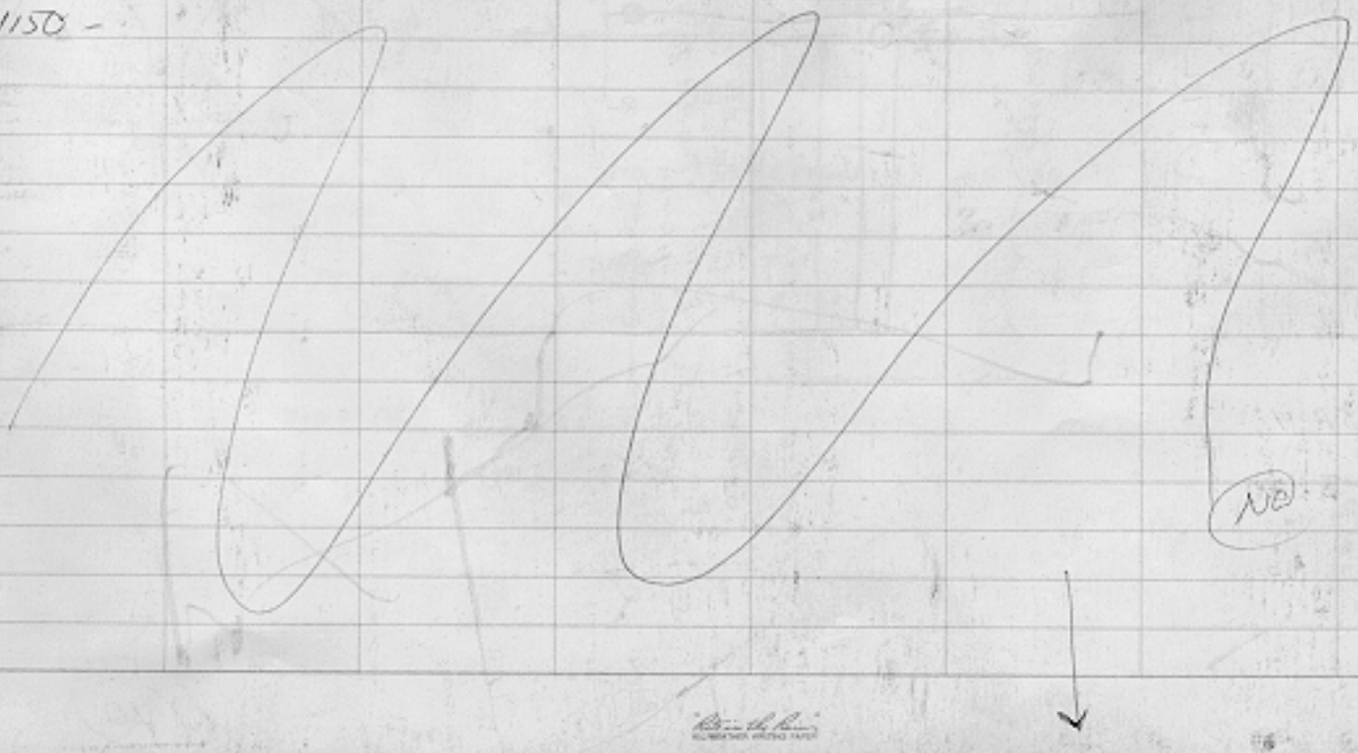
0930 - Through discussion with Wilma and Bonnie, determined that one well serves both the cafeteria and the ~~the~~ School.
- ~~There is supposed~~ They think this is the only well in town.

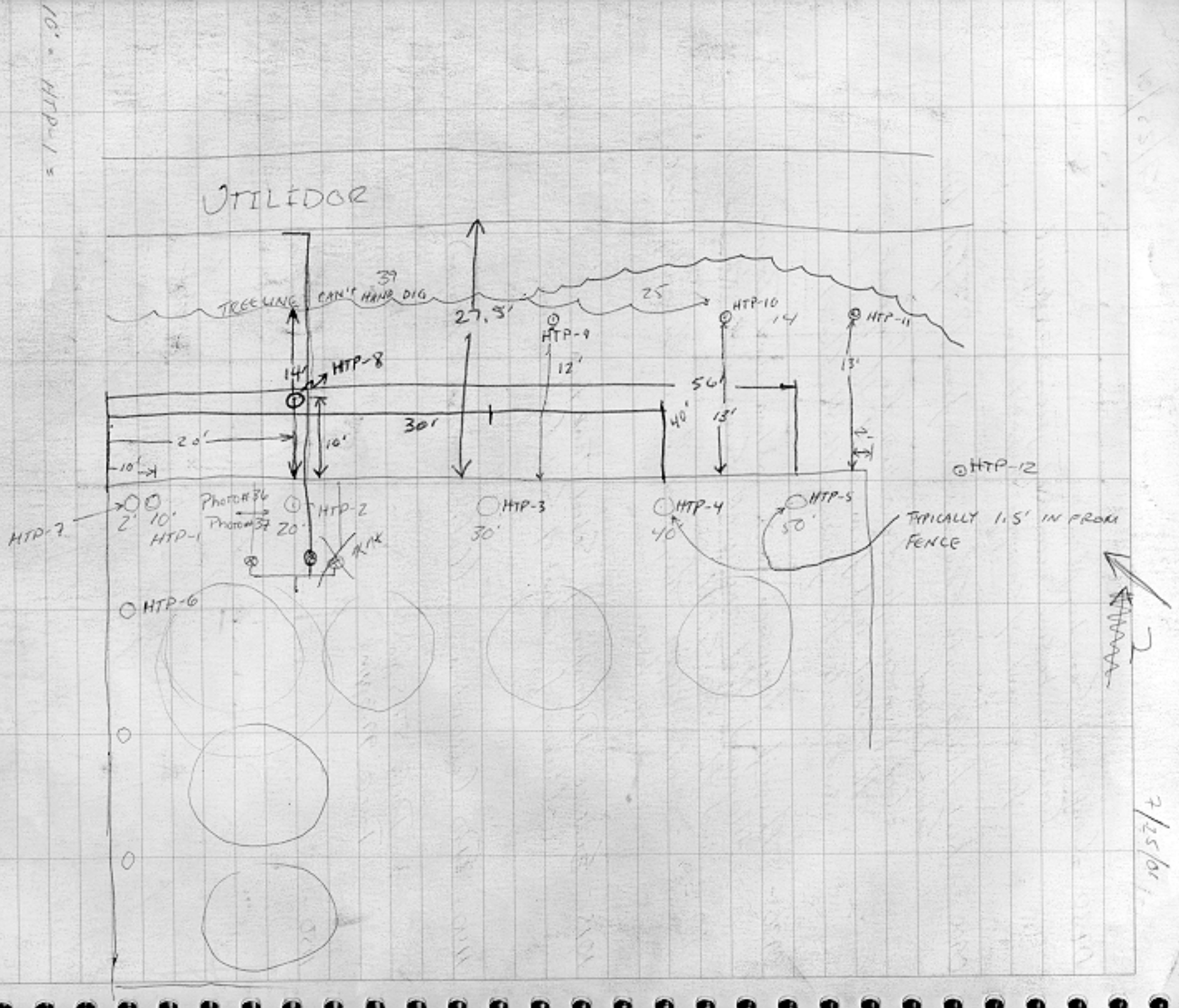
1015 - Surface Delineation of School Tank farm
- Checking for extent of Soil Contamination

1140 - PID Calibration (Calibration Gas = 100ppm)

Pre@ 87.5 ppm
Post@ 99.8ppm

1150 -

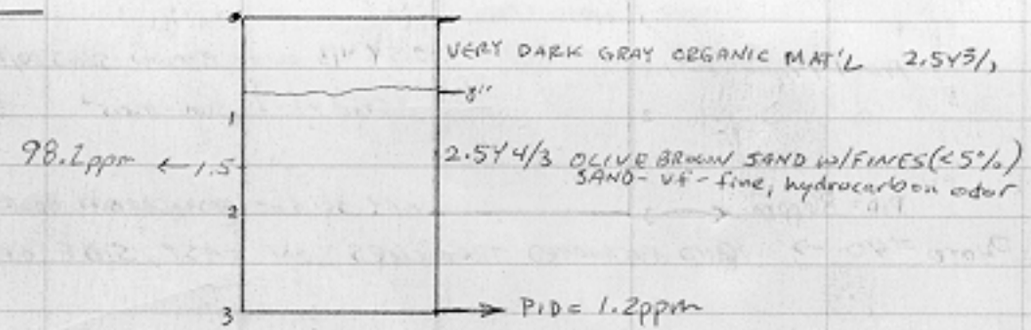



UTILIDOR
TREELINE
CAN'T HAND DIG
39
25
27.5'
HTP-9
12'
HTP-10
14
HTP-11
13'
14'
HTP-8
56'
30'
40'
13'
20'
10'
10'
HTP-12
HTP-7
2'
10'
HTP-1
Photo #36
Photo #37
20'
HTP-2
HTP-3
30'
HTP-4
40'
HTP-5
50'
TYPICALLY 1.5' IN FROM FENCE
HTP-6
7/25/01

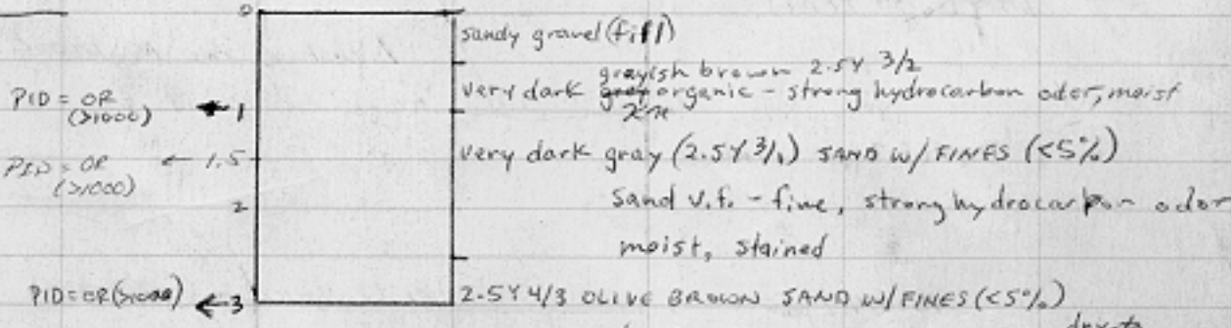
7/25/01

1150 HAND EXCAVATING AT TF#1 (YUKON FLATS SCHOOL DISTRICT TANK FARM)

HTP-1

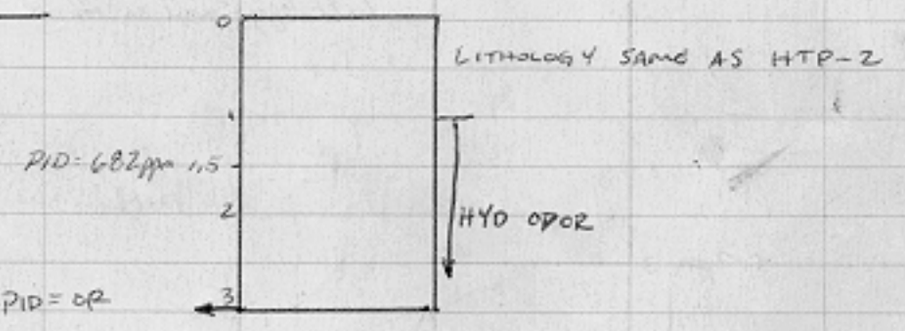


HTP-2

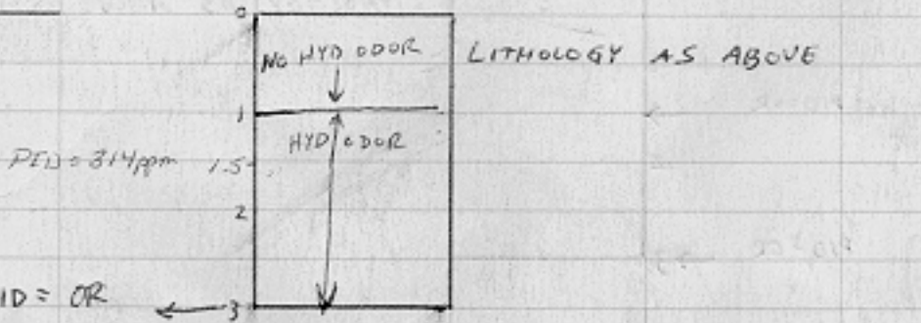


PHOTOS #'s 36 ; 37 38 & 39

HTP-3

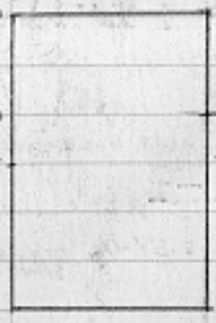


HTP-4



BEAVER 7/25/01

1330 HTP-5 (AT TF#1)



very dark grayish brown 2.5Y 3/2 organic

PID=144ppm ← 1.5

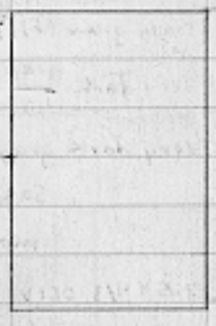
2.5Y 4/3 olive brown SAND w/FINES (<5.0%)
Sand v.f-f, semi-moist

PID = 86ppm ← 3

VERY SLIGHT HYDROCARBON ODOR AT 3.0'

PHOTO #40 → HAND EXCAVATED TRENCHES ON EAST SIDE OF TF#1

HTP-6 (AT TP#1)



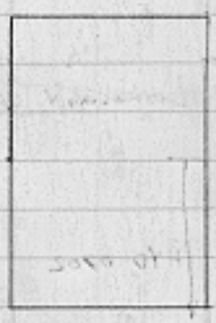
Lithology Same AS HTP-5

PID=68.7 ppm ← 1.5'

PID=64.2 ppm ← 3

Slight Hydrocarbon odor at 3'

HTP-7 (AT TP#1)

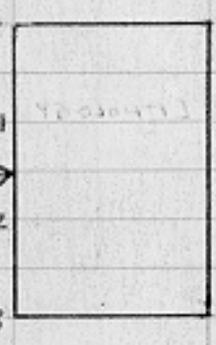


Lithology Same as Above

PID=159ppm ← 1.5

PID = 5.7ppm 3

HTP-8 PID = 528 → 0



LITHOLOGY AS ABOVE

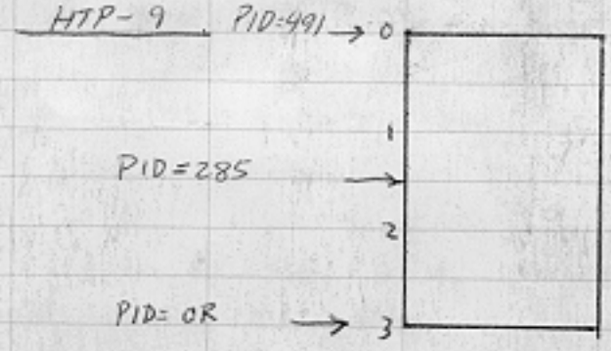
PID=OR →

PID=OR → 3

12

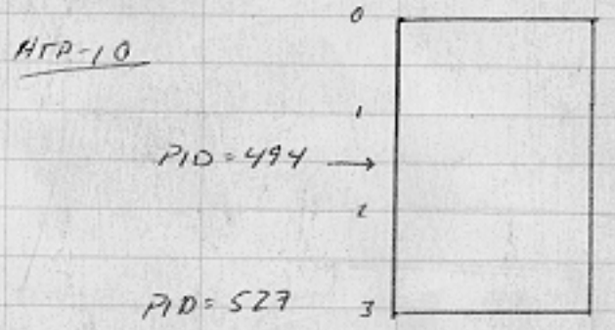
7/25/01

1800 HTP-9 PID=491 → 0



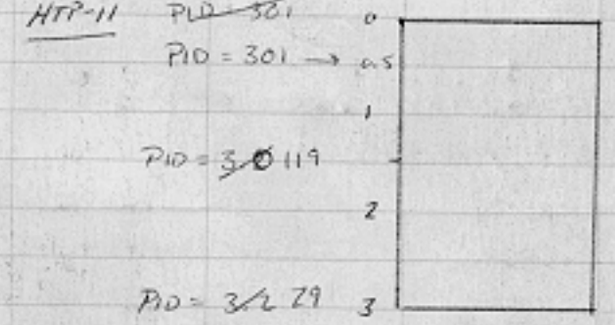
LITHOLOGY AS ABOVE EXCEPT VERY MOIST AT 1.5'

HTP-10



Lithology Same As Above Not quite As moist

HTP-11 PID ~~501~~



Lithology Same As Above

1930 - Begin inputing maps into Corel Draw

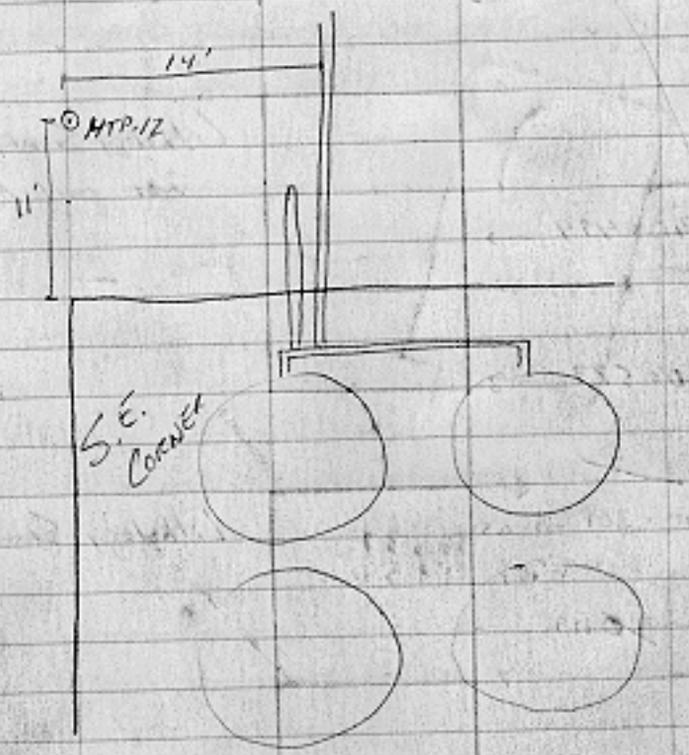
Jonathan P. Olson

7/26/01

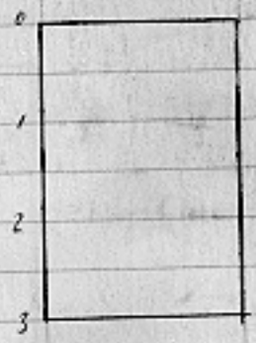
0830 - PID Calibration (Span gas = 100 ppm)

Pre = 98.9 ppm

Post = 100.1 ppm



0915 HTP-12



7/26/01

1030 - ~~Fuel~~ Spill occurred in old generator building 1 year before new School was built. One tank from tank farm (~5000 gal) pumped out into building and leaked through floor into the soil
Operator of pump at the time was Marvin O'Brian
Heard this from Andy.
Marvin O'Brian was a teacher from the school who was filling the day-tank and forgot about it.
- Visible Stained Soil under building and Stressed vegetation on North Side

1040 - Met with Operator at his house after he arrived from training in Fairbanks. Agreed to be ready to start by 1330 on Thursday.

1215 - Talked with Max to ~~3~~ update him on conditions.

1300 - Mobilized Sampling materials and Charged battery in PID

1330 MEET OPERATOR AT BACKHOE. BACKHOE WON'T START.

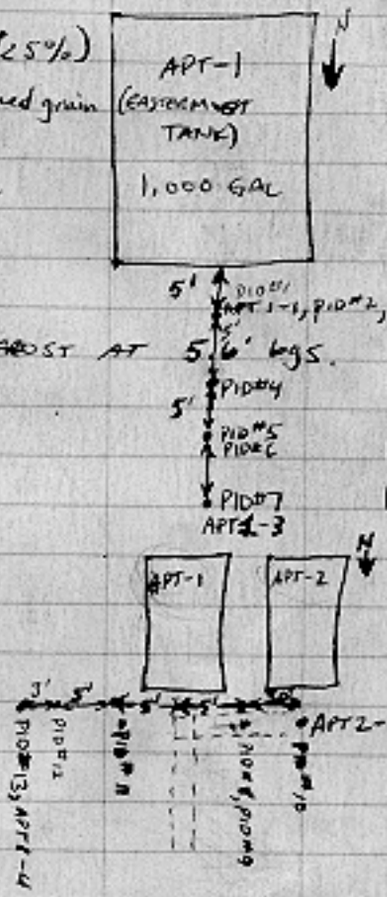
1730 BACKHOE OPERATIONAL. MOBE TO AIRPORT TO DO TEST PITS AT 2 - 1,000 GALLON GAS TANKS (OPERATED BY STORE)

LITHOLOGY

0-5' SAND W/FINES (<5%) olive brown, f. to med grain ang-subround

5.6' PERMAFROST

1755 ENCOUNTER PERMAFROST AT 5.6' bgs.
LITHOLOGY - AS ABOVE



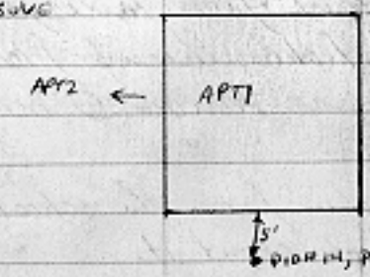
TIME	SAMPLE	DEPTH (FT bgs)	PID (PPM)
1742	APT 1-1 (PID#1)	1.0'	OR Photo #67
1754	~~APT 1-2~~ (PID#2)	4.5'	OR
	~~APT 2~~ XH		
1800	APT 1-2 (PID#3)	5.6'	OR
1805	PID#4	5.5'	180
1810	PID#5	4.0'	4.7
1813	PID#6	5.5'	6.4
1825	PID#7	5.6'	5.5 ~~Strong~~
1830	PID#8	4.0'	NM Photo #68
1833	PID#9	5.6'	4.0
1840	PID#10 (APT 2-1)	5.0'	5.0
1858	APT 1-3	5.6'	
1905	PID#11	5.0'	47 NO ODOR
1910	PID#12	5.0'	46 NO ODOR
1930	PID#13 APT 1-4	5.5'	42

Photo #69 - BACKFILL AT NORTH SIDE OF AIRPORT TANKS

7/26/01

1937 MOVE TO BACK SIDE (SOUTH) OF TANKS TO DIG TEST PIT AFTER BACKFILLING FRONT TRENCH.

LITHOLOGY - AS ABOVE



	SAMPLE	DEPTH	PID (ppm)
2003	PID#14	3.0'	4.2
2005	PID#15 (APT1-5)	5.5'	5.1

2015 COMPLETE EXCAVATION AND BACKFILL AT AIRPORT FUEL TANKS.

2030 Return Samples to fridge

Hours 12.5

Nathan P. Olk

7/27/01

0800 MEET WITH RICHARD TO BEGIN EXCAVATIONS FOR DAY. WILL START AT AIRPORT FILL LOCATION FOR PIPELINE THAT SERVES POWER HOUSE AND SCHOOL TANK FARMS. PID CALIBRATED TO 99 ppm WITH 100 ppm SPAN GAS

LITHOLOGY –

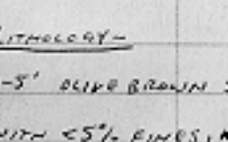
0-5' OLIVE BROWN SAND (f-med) WITH <5% FINES, ~~XXX~~ SEMI-moist

4'~~8~~-5' OLIVE BROWN SILTY SAND (SM-O-v.f-med), moist

5'-7.5 SANDY (F-CGL) GRAVEL (to 1.5")

SAND ANG-SUBANG 30%, GRAVEL-SUBANG TO SUBROUND. OLIVE GRN

* STAINING AT SURFACE TO ~ 1.5' bgs (PHOTOS 71, 72)

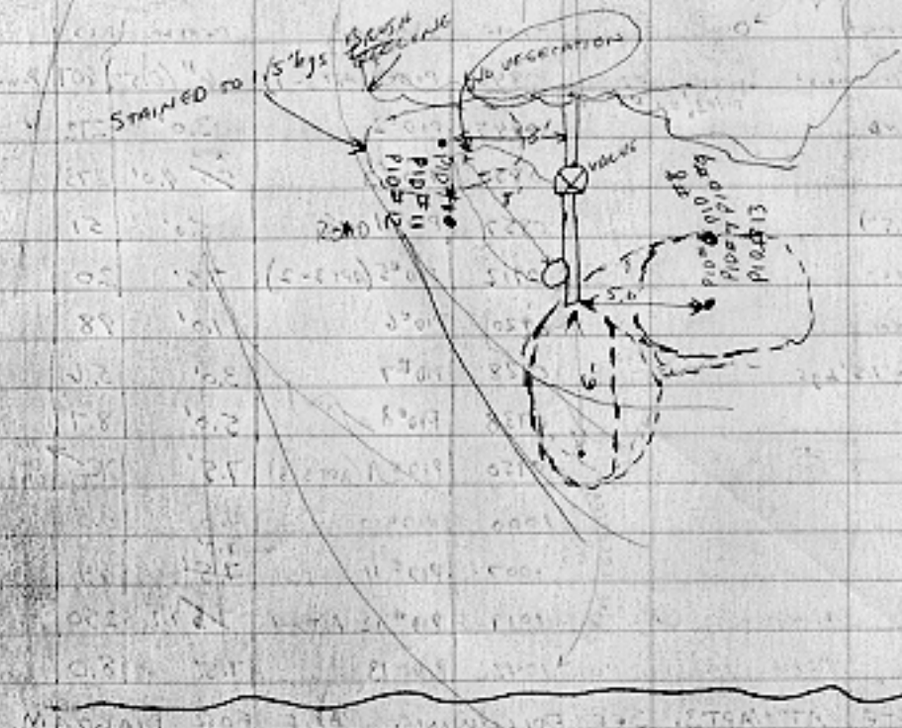


TIME	SAMPLE	DEPTH	PID	
0840	PID #1 (APT3-1)	6" (0.5')	607	PHOTO #70
0845	PID #2	3.0'	272	#71
0850	PID #3	~~5.6~~ 4.0'	273	#72
0857	PID #4	5.0'	51	#73
0912	PID #5 (APT3-2)	7.5'	20	
0920	PID #6	1.0'	98	
0928	PID #7	3.0'	5.6	
0938	PID #8 ~~XXX~~	5.0'	8.7	
0950	PID #9 (APT3-3)	7.5'	OR	PID CALIB CHECK. OUT OF CAL. NO ODOR. RECALIB
1000	PID #10	4.0'	8.5	
1007	PID #11	~~7.5~~ 7.0' ~~XXX~~	64	
1019	PID #12 APT3-4	~~7.5~~ 7.2' ~~XXX~~	250	EXTENT OF EXCAVATING POSSIBLE
1042	PID #13	7.5'	8.0	

SAME LOCATION

1047 EXCAVATION COMPLETE AT APT3. SEE FOLLOWING PAGE FOR DIAGRAM.

AIRPORT PIPELINE FILL (ABT-3)



RAN PERFORMANCE WITH RESPONSE FACTOR OF 2
GET READING OF 69 PPM. RECAL PID AND
RESAMPLED IN ZONE AT SAME LOCATION
SEE PID #4. PERFORMED CALIBRATED BLANK=0, CAL=100

1232 ARRIVE AT ABANDONED GASOLINE TANK SITE TO BEGIN EXCAVATING (ABT IS SITE ID)

LITHOLOGY			SAMPLE		DEPTH	PID
0 - 0.5'	DARK GREYISH BROWN ORGANIC		1240	ABT1-1 (ABT-1) PID #2	2.0'	OR ~~No ODOR IN SOIL~~ ~~5.2~~
0.5 - ~~4.0~~ 4.5'	OLIVE BROWN SAND W/FINES	SAME LOCATION	1235	PID #1	0.5'	39
			1320	PID #3	2.0'	5.2
	SAND-(vf-f) < 5% fines DRY TO SEMI-MOIST		1325	PID #4	4.0'	4.6
			1340	PID #5 (~~ABT-2~~) ABT1-2	7.5'	7.2
~~4.0~~ 4.5 - 7.5 ~~7.5~~	SANDY GRAVEL OLIVE BROWN GRAVEL 80% SUBANG-SUBROUND, SAND MED-CRS SUBRND to ANG MOIST					

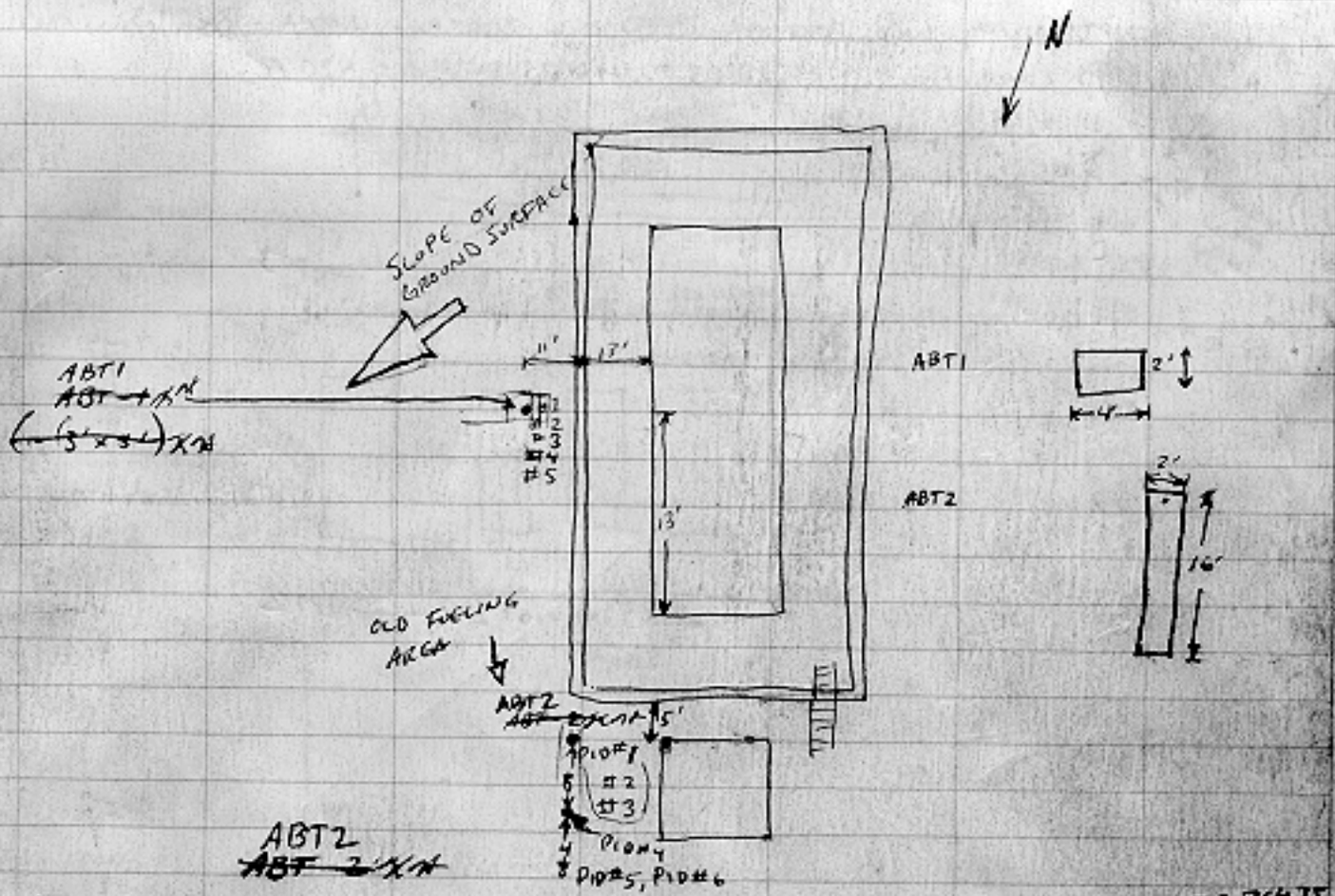
VERTICAL EXTENT OF EXCAVATING CAPABILITIES

1345 EXCAVATION COMPLETE AT ABT-1. BEGIN BACKFILL OF PIT.

1355 SET UP TO EXCAVATE AT ABT-2.

SLK

ABANDONED TANK



Lithology		Time	Sample	Depth	PID
0'-0.5'	10YR 3/4 organic with flecks of 10YR 3/6	1355	PID#1	1.0'	386
		1355	(ABT2-1, ABT3-1)	1.5'	
0.5'-2'	very dark gray organic	1400	PID#2	4.0'	3.7
2'-3'	olive brown sand w/fines (as before)	1410	PID#3 (ABT2-2)	5.0'	3.6
		1420	PID#4	1.0'	25.1
3-5'	Orange w/sand as with ABT-1	1425	PID#5	1.0'	489
		1432	PID#6	3.0'	9.1

PHOTOS 74 & 75

(ABT3-1) DUPE (~~ABT3-2~~) GRAB/TEX

1437 CEASING EXCAVATION AT ABT2. APPEARS TO BE MINOR SURFICIAL CONTAMINATION. FIELD SCREENING DOES NOT INDICATE A SIGNIFICANT CONTAMINATION BELOW 2.5'. BACKFILLING.

1505 ARRIVE AT NEW POWER PLANT TO BEGIN EXCAVATING.

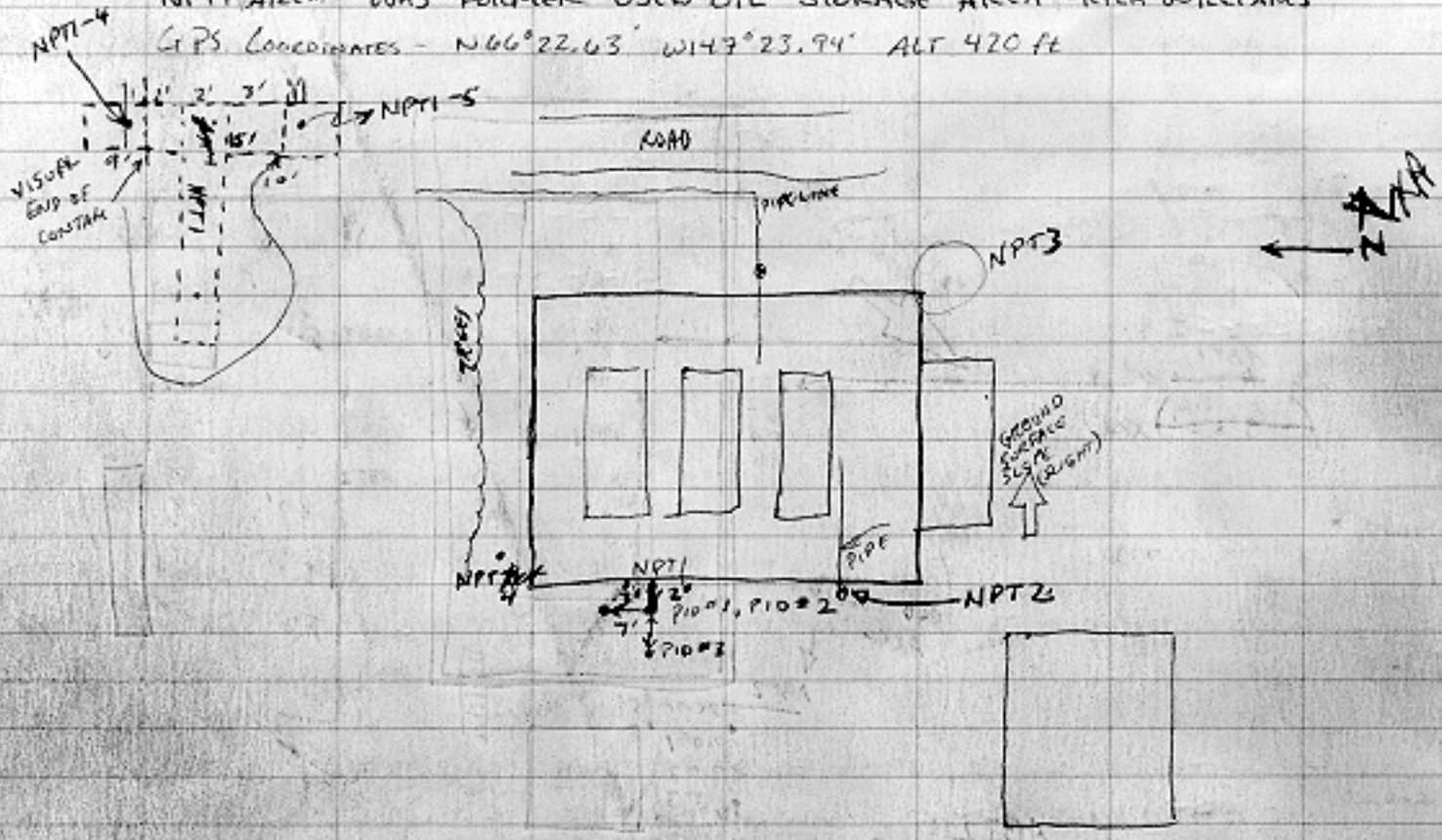
NOTE 1400 CONSTRUCTION STOPPED BY. USED TO WORK @ WASHINGTON. DAY TANK OVERFLOWED ALL THE TIME. OTHER OPERATORS TOLD HER NOT TO WORRY ABOUT IT.

7/27/01

New Power Plant NPT

NPT1 AREA WAS FORMER USED OIL STORAGE AREA - Rich Williams

GPS Coordinates - N66°22.63' W149°23.94' ALT 420 ft



Lithology	Time	Sample	Depth	PID	PF (response=7)
0-1' dark brown grade organic	1510	PID#1 (NPT1-1)	1.0'	14.6	EGEF very oil stained Photo #76
soil, stained, strong	1520	PID#2 NPT1-2	5.0'	0.6	19 #77
hydrocarbon odor	1530	PID#3	5.0'	3.1	68
1-5' olive brown sand	1550	NPT1-3	1.0'		
with fines					

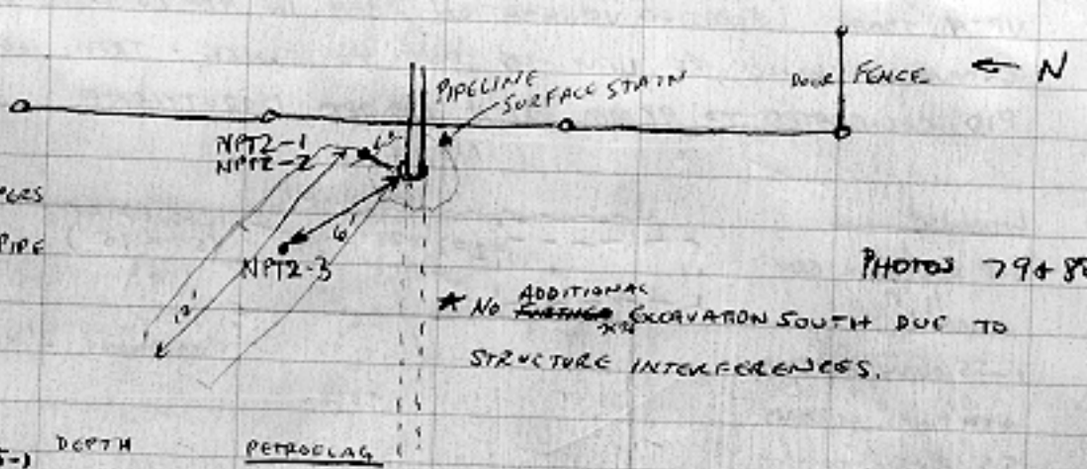
Appears to be heavy oil contamination at surface at NPT1, extends out from fence (W) about 8 feet. NPT1-3 collected at same level (vertically) as hvy oil, but 9 feet out from fence. Organic soil in this area, but unstained, no hydrocarbon odor.

1640	NPT1-4	1.0'	—	65
1645	NPT1-5	1.0'		

1654 Excavating complete at NPT1, commence backfilling.

7/27/01

1659 BEGIN EXCAVATION AT NPT2



LITHOLOGY

AS WITH NPT1, ODOR TAPERS OFF ~ 5' RADIUS FROM PIPE AS DOES STAINING.

PHOTOS 79 + 80

* NO ADDITIONAL EXCAVATION SOUTH DUE TO STRUCTURE INTERFERENCES.

	SAMPLE	DEPTH	PETROFLAG
1705	NPT2-1 (+NPT5-1)	1.5'	OBVIOUSLY CONTAMINATED — DUPE (NPT5-1) STRONG ODOR
1720	NPT2-2	5.0'	0 ppm
1725	NPT2-3	5.0'	127 ppm

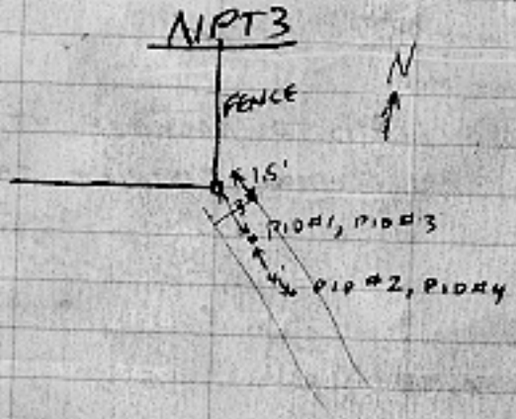
1735 BEGIN EXCAVATING AT NPT3

LITHOLOGY

0-1' AS ABOVE

1'-4'** 1'-5.5' SAND W/FINES AS BEFORE**

5.5' PERMAFROST



PHOTOS: 81 + 82

	SAMPLE	DEPTH	PID	PETROFLAG
1740	PID#1	1.0	22	NO HYDROCARBON ODOR
1741	PID#2	1.0	3	" " "
1748	PID#3	3.0'	9.4	" " "
1750	PID#4	3.0'	77.6	49 ppm " " "
1800	PID#5 NPT3-1	5.5'		" " "
1810	PID#6 NPT3-2	5.5'		" " "
1825	BEGIN BACKFILLING AT NPT3			
1835	BACKFILL AT NPT2.			
1900	DONE EXCAVATING FOR DAY.			
1930	RETURN TO CABIN			

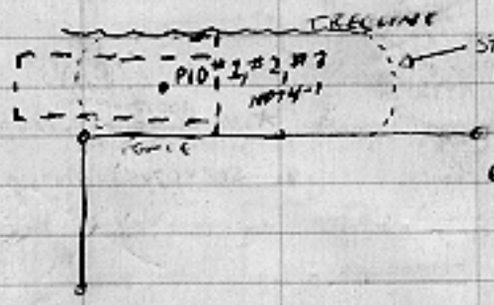
Karl Kell

7/28/01

0800 MEET WITH OPERATOR AT NEW POWER PLANT. WILL START EXCAVATION AT NPT4 TODAY. (STRESSED VEGETATION AREA IN NW CORNER OF TANKFARM)
EXCAVATION WILL BE LIMITED DUE TO FENCE + TREELINE INTERFERENCE
PID CALIBRATED TO 98 ppm WITH 100 ppm ISOBUTYLENE.

NPT4

LITHOLOGY
0-1' VERY DARK GRAY ORGANICS
1'-5.5 OLIVE BRN SAND WITH FINES AT BASE
5.5' PERMAFROST



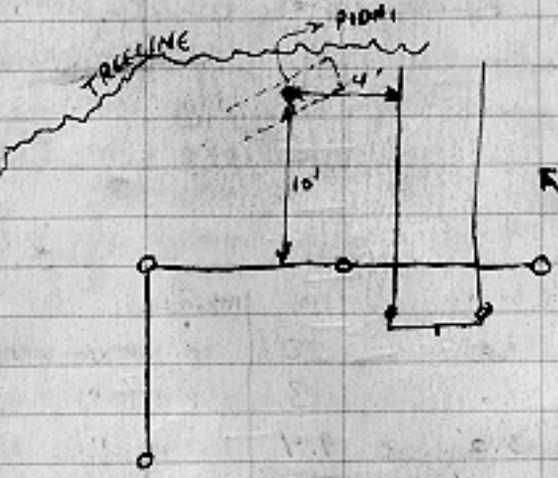
PHOTOS: #88

EXCAVATION: 2' x 12' - 5.5' DEEP

TIME	SAMPLE	DEPTH	PID	
0835	PID#1	1.0'	3.5 ppm	
0842	PID#2	3.0'	7.8 ppm	
0855	PID#3 (NPT4-1)	5.5'	8.3 ppm	EXTENT OF EXCAVATING POSSIBLE

0900 BACKFILLING AT NPT4.
0915 BACKHOE WILL NOT MOVE.
1000 ADDED TRANSMISSION FLUID TO BACKHOE. IT IS NOW OPERATIONAL.
MOBE TO YUKON FLATS SCHOOL DISTRICT TANK FARM. (STF). SEE NEXT PAGE.

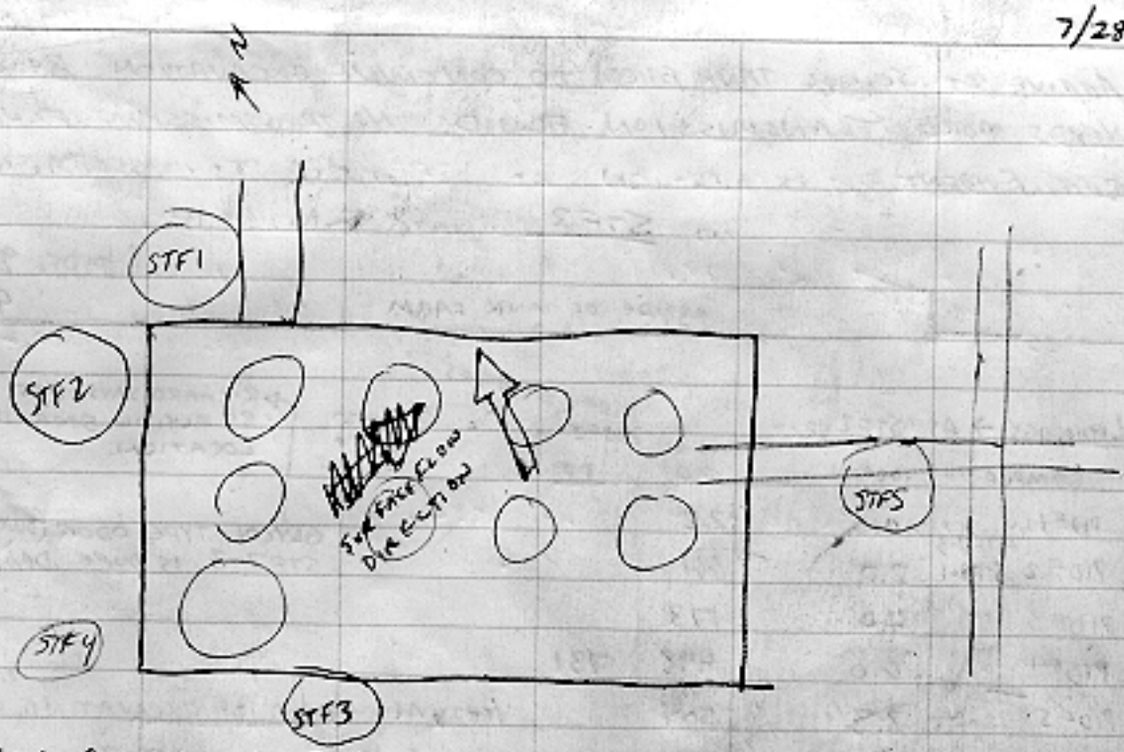
LITHOLOGY
0-1' VERY DK GRAYISH BROWN, ORGANICS
1'-5' OLIVE BRN SAND w/ 15% FINES
5'-6' ~~ICE~~ SANDY GRAVEL



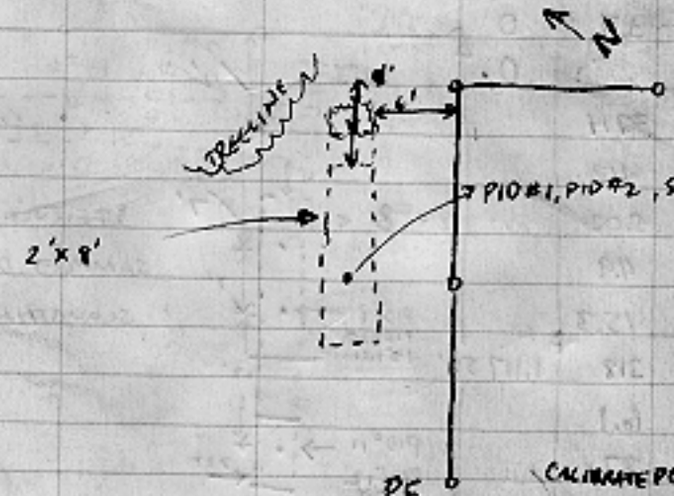
PHOTOS: #89, 90

	SAMPLE	DEPTH	PID	PF	
1010	PID#1	0.5'	406		
	PID#2	2.0'	78		
1020	STF1-1, STF7-1	1.0'	—		DUPE IS STF7-1 DRILLED
1025	STF1-2, PID#3	3.0'	11	14	
1035	STF1-3, PID#4	6.0'		0	EXTENT OF EXCAVATING ABILITY REACHED
1040	BACKFILLING AT STF1.				
1045	MOVE TO STF2.				

7/28/01



1046 BEGIN EXCAVATION OF STF2



PHOTOS: 91, 92, 93

CALIBRATE PETROFLAG BLANK = 0 CAL = 1000
RESPONSE = 7

	SAMPLE	DEPTH	PID	PF	
1048	PID#1	0.5'	OR (>1000)	104	ORGANIC MATERIAL
	PID#2	2.0'	15		
1055	STF2-1	1.0'			
1057	STF2-2, STF1-2	3.0'	25.9	0	STF1-2 DUPE DR+IRR0
1115	STF2-3	9.7'		0	EXCAVATION EXTENT REACHED VERTICALLY

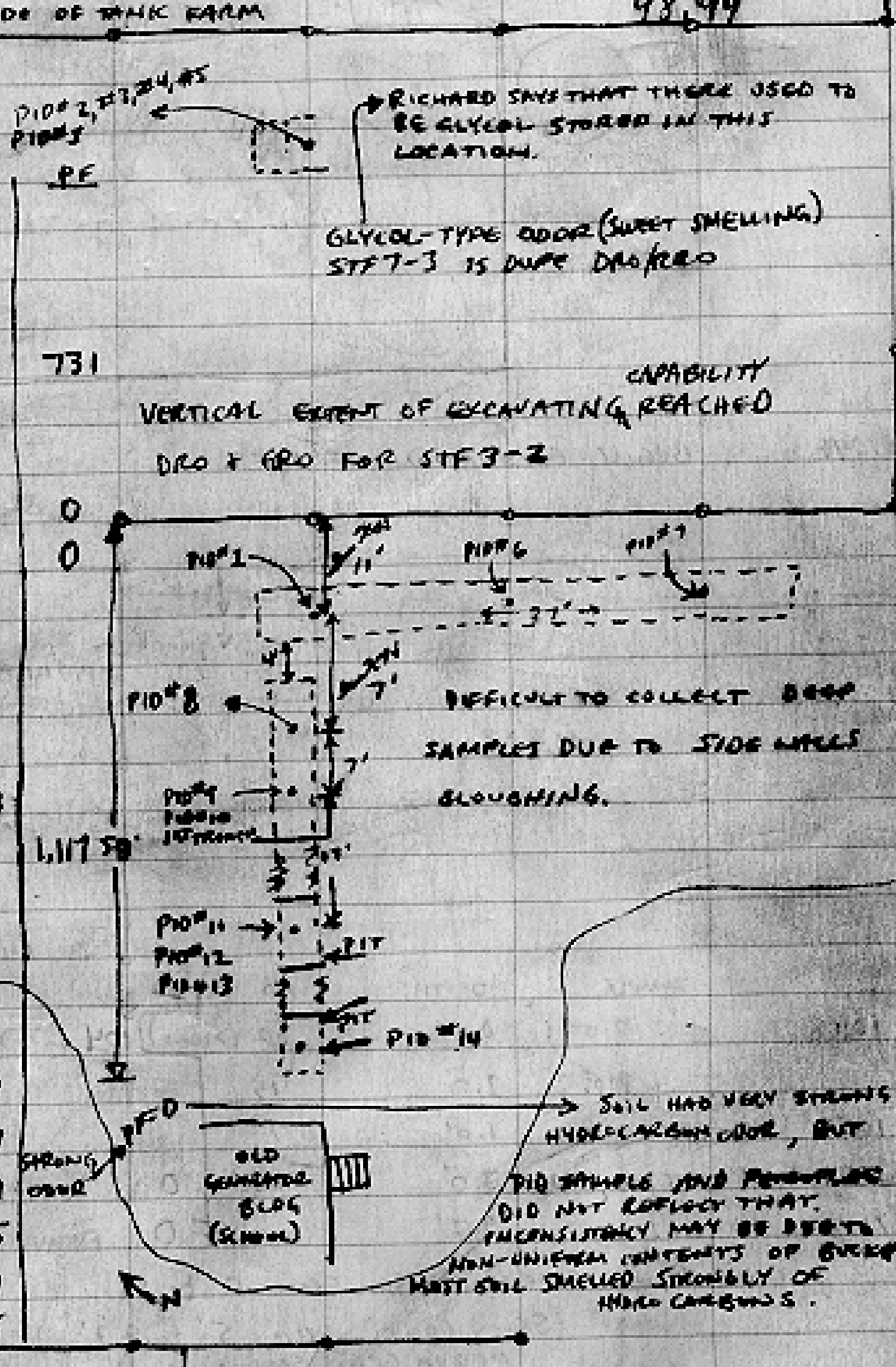
OLIVE-BROWN FINE GRAIN SAND FROM 0 to 5'

SANDY GRAVEL FROM 5' to 9.7'
MEDIUM GRAIN SAND
GRAVEL 0.5" to 1" SEMI-ANGULAR

1148 EXCAVATING AT STF2 COMPLETE. COMMENCE BACKFILLING

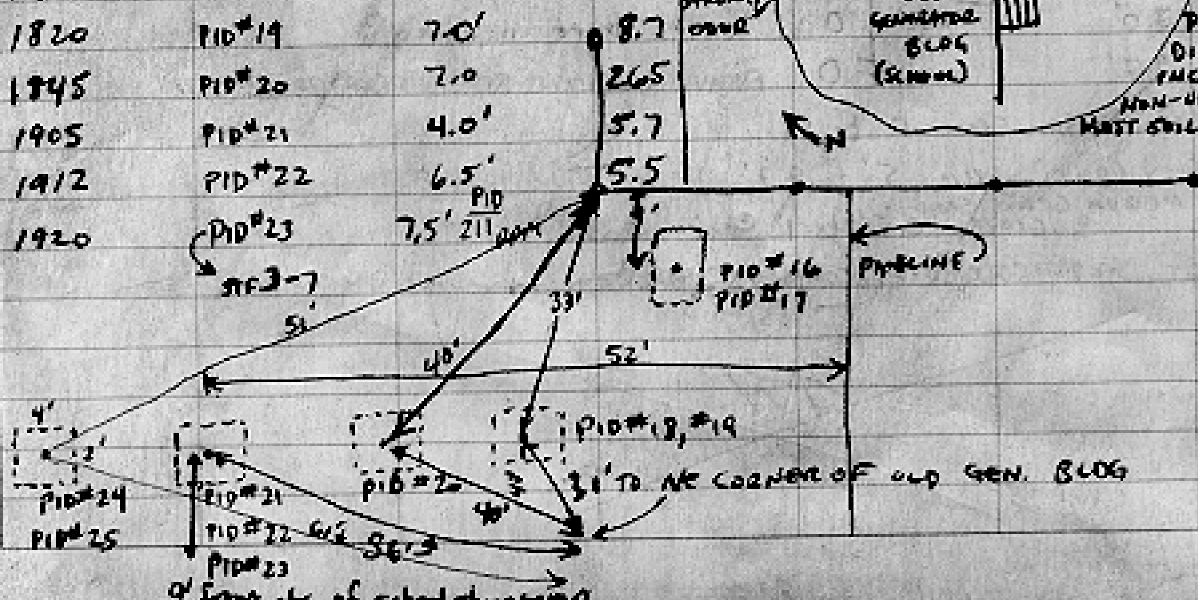
1300 Arrive at school tank farm to continue excavation. Backhoe needs more transmission fluid. No transmission fluid leak evident.

STF3



Lithology → as STF2

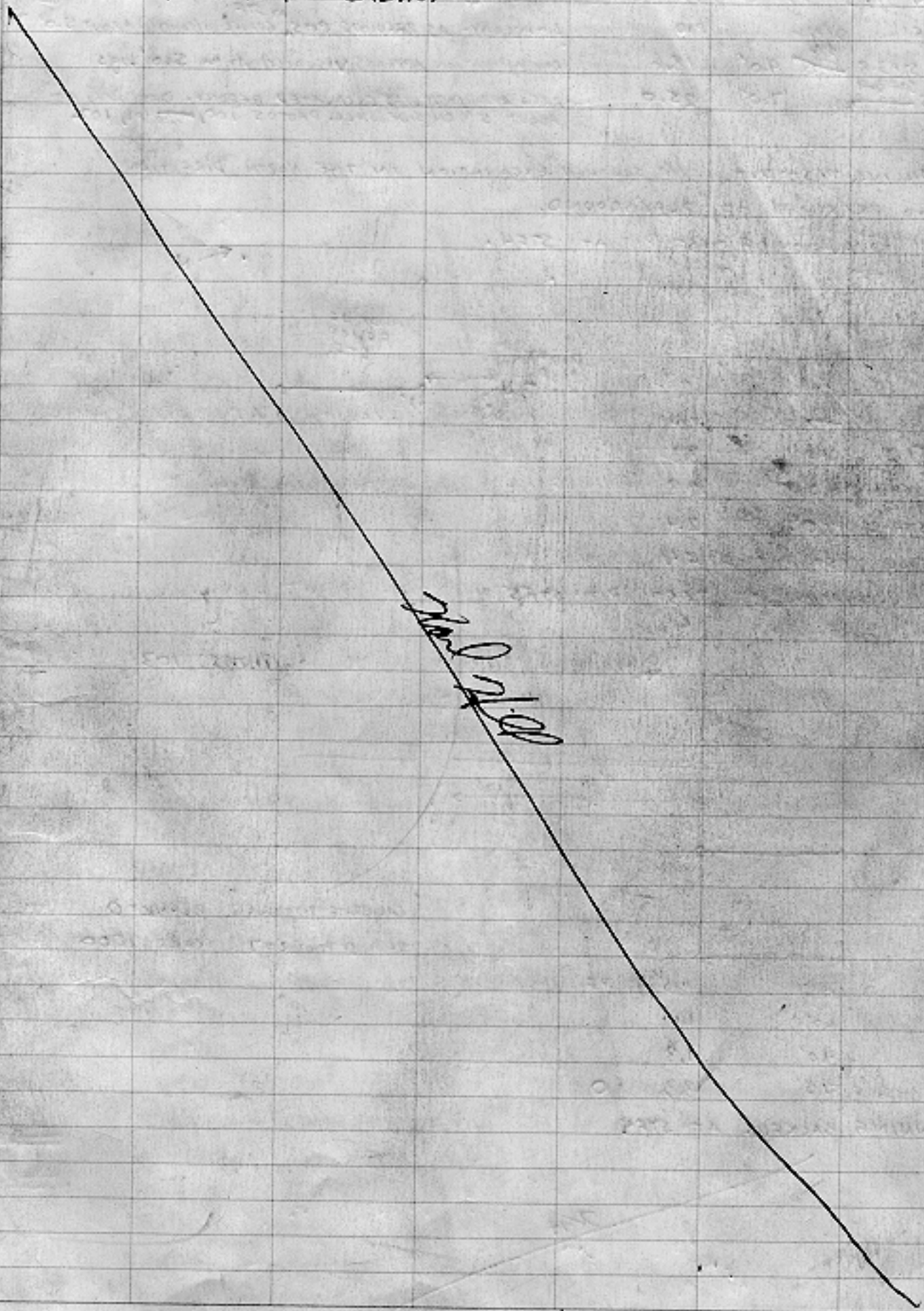
	Sample	Depth	PID	PF
1325	PID#1	0.5'	2.2	
~~1332~~ 1330	PID#2 STF3-1 (STF7-3)	2.0'	661	
	PID#3	4.0'	173	
1335	PID#4	6.0'	448	731
1425	PID#5 STF3-2	8.5'	504	
1450	PID#6	8.5'	300	
1505	PID#7 STF3-3	4.0'	3.7	0
1530	[illegible] STF3-4	8.5'		0
[illegible]	PID#8	4.0'	374	
[illegible]	PID#9	4.0'	412	
[illegible]	PID#10	7.0'	202	
[illegible]	PID#11 STF3-5	9.5'	44	
[illegible]	PID#12	7.0'	15.3	
[illegible]	PID#13	8.5'	318	1,117
1710	PID#14	3.0'	6.1	
1720	PID#15 STF3-6 (STF7-4)	7.0	37	
1740	PID#16	2.0'	178	
1750	PID#17 STF3-10	~~6.~~ 5.0'	269	
1800	PID#18	6.0'	6.7	
1820	PID#19	7.0'	8.7	
1845	PID#20	7.0	265	
1905	PID#21	4.0'	5.7	
1912	PID#22	6.5'	5.5	
1920	PID#23 → STF3-7	7.5'	PID 211 ppm	



1930 Backfilling test pit

2000 RETURN TO TRIBAL OFFICE TO MAKE PHONE CALL TO MAX.

2030 RETURN TO CABIN.



7/29/01

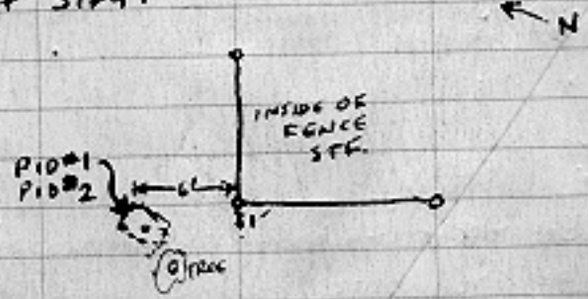
0800 ARRIVE AT SCHOOL TANK FARM. CALIBRATE PID. CALIBRATES TO 98 ppm WITH 100 ppm SPAN GAS.

0900 BEGIN TEST PIT EXCAVATION AT STF3. SEE PREVIOUS DIAGRAM.

	SAMPLE	DEPTH	PID	LITHOLOGY- AS PREVIOUS PITS, ~~in~~ STF GRAVEL W/SAND @ ABOUT 5.0'
0905	PID#29 STF3-8	~~5.0~~ 4.0'	18.6	CONTAMINATION APPEARS (VISUALLY) AT ~ 5.0' bgs
0920	PID#25 STF3-9	7.0'	25.0	*AREA APPARENTLY WAS EXCAVATED BEFORE. DIRTY RAG AT ABOUT 5' ON SIDEWALL. PHOTOS 100, ~~101~~, 102

0930 BACKFILLING TEST PIT. NO FURTHER EXCAVATION IN THE NORTH DIRECTION DUE TO PROXIMITY OF PLAYGROUND.

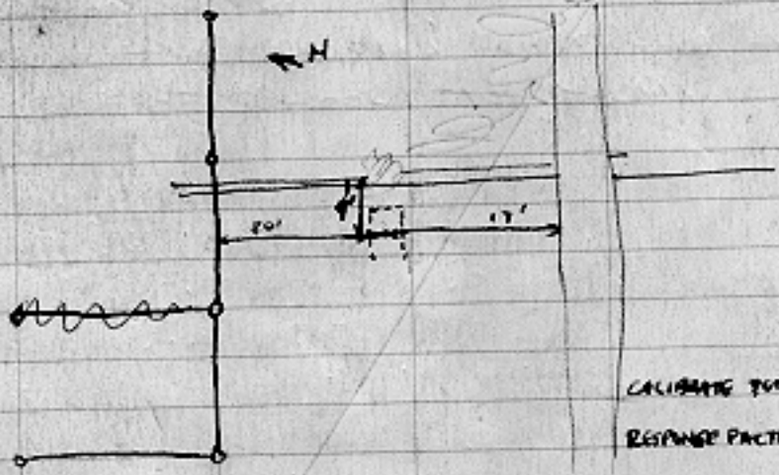
0944 BEGIN EXCAVATION OF TEST PIT AT STF4.



	SAMPLE	~~STF~~ DEPTH	PID
0946	PID#1	1.0'	33
0950	PID#2 STF4-1	4.0'	2.8
0955	PID#3 STF4-2	7.0'	2.4

1000 BACKFILL TEST PIT STF4

1010 BEGIN EXCAVATION OF TEST PIT STF5



PHOTOS: 103

CALIBRATE ~~PHOTOFLAG~~. BLANK = 0

RESPONSE FACTOR = 7 CAL = 1000

	SAMPLE	DEPTH	PID	PF
1013	PID#1	1.0'	1.1	
1015	PID#2	4.0'	1.8	
1020	PID#3 STF5-1	7.5'	33	0

1045 BEGINNING BACKFILL AT STF5

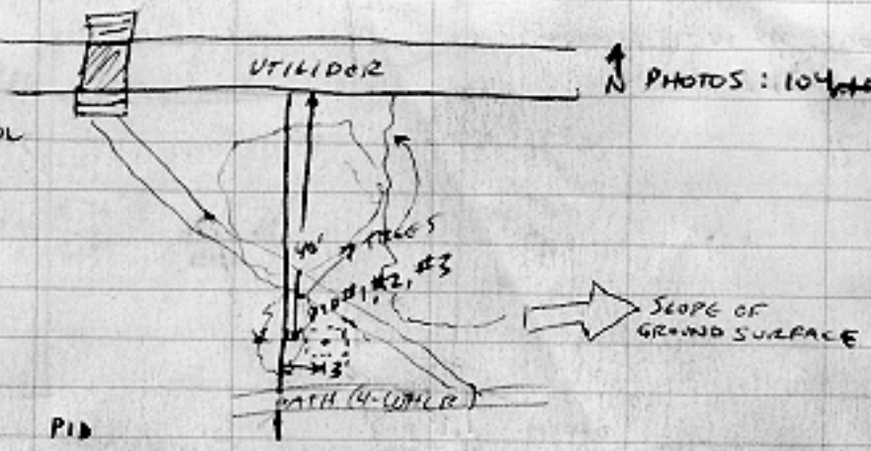
~~STF~~

7/29/01

1100 BEGIN EXCAVATION OF TEST PIT AT PIPELINE LEAKING JOINT SOUTH OF SCHOOL TANK FARM AND SOUTH OF UTILIDOR (PLP). EXISTING PIPELINE STILL SERVES WASHETERIA.

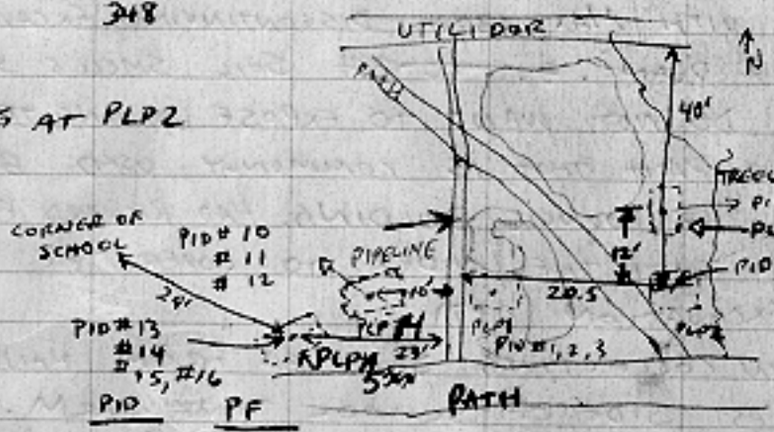
LITHOLOGY

AS TANK FARM @ SCHOOL



	SAMPLE	DEPTH	PID	
1105	PID#1 PLP1-1 PLP7-1	1.0'	563	PLP5 7-1 IS DUP OF PLP1-1 DRO/RRO
1110	PID#2 PLP1-2	4.0'	768	
1120	PID#3 PLP1-3	7.0'	348	
1125	BACKFILLING PIT.			

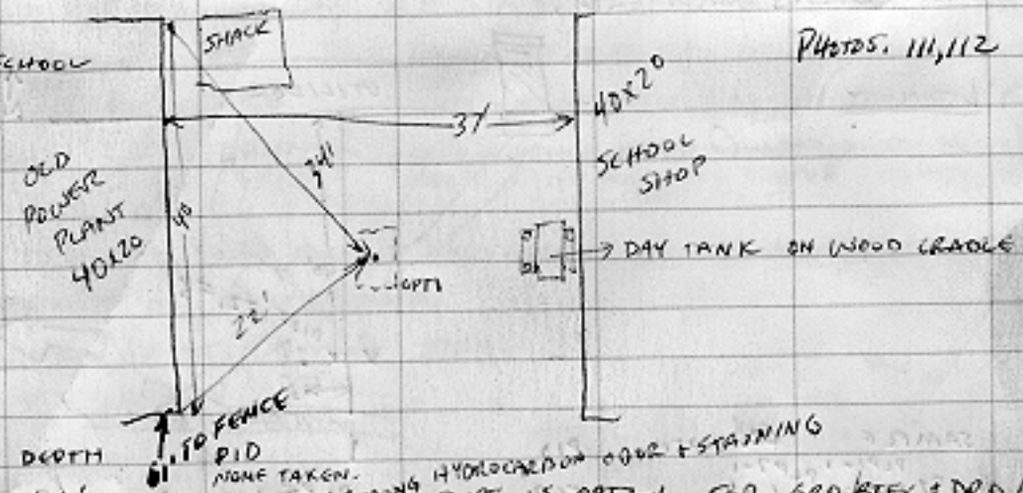
BEGIN EXCAVATING AT PLP2



	SAMPLE	DEPTH	PID	PF	
1253	PID#4	1.0'	16.2		PHOTOS: 106, 107, 108, 109, 110 (PLP4; PLP3)
1300	PID#5 PLP2-1	4.0'	700	0	NO ODOR
1304	RECALIBRATE PID. CALIBRATES TO 97 ppm with 100 ppm Isobutylene				
1310	PID#6 PLP2-2	7.5'	19.8	69	
1330	PID#7	1.0'	3.8		PLP3
1337	PID#8	4.0'	8.8		PLP3
1400	PID#9 PLP3-1 PLP2	7.5'	4.1		PLP3
1410	BACKFILL COMPLETE AT PLP2. BEGIN TRENCHING AT PLP3 PLP4				
1415	PID#10	1.0'	26.2		
1418	PID#11	4.0'	24.0		
1428	PID#12	7.0'	504		STRONG HYDROCARBON ODOR
1435	BACKFILL COMPLETE AT PLP4. BEGIN TEST PIT EXCAVATION FOR PLP5				
1438	PID#13	1.0'	14.6		
1440	PID#14	4.0'	9.5		
1445	PID#15	6.0'	14.9		
1455	PID#16 PLP4-1 PLP5-1	7.0'	16.4	9	
1515	BEGIN BACKFILLING PLP5				

7/29/01

1530 BEGIN EXCAVATING AT OLD SCHOOL POWER PLANT BUILDING (N SIDE) (OPT)



LITHOLOGY: AS WITH SCHOOL TANK FARM

PHOTOS. 111, 112

		DEPTH	PID	
1535	~~OPT1-1~~ OPT7-1	1.0'	NONE TAKEN. EXTREMELY STRONG	HYDROCARBON ODOR & STAINING DUPE IS OPT7-1 FOR GRO/BTEX & DRO/RRO
1550	PID#1 OPT1-2	7.5'	425	

1600 SPOKE WITH MAX ABOUT DISCONTINUING EXCAVATION AT OLD SCHOOL POWER PLANT, ~~DUE TO XXX~~ SOIL SMELLS STRONGLY OF HYDROCARBONS, AND DO NOT WANT TO EXPOSE ANYONE TO THE SOIL. THE AREA IS A ~~PATH~~ THAT IS COMMONLY USED BY CHILDREN AND ADULTS NEAR THE COUNCIL BUILDING. HAD RICHARD GET A CLEAN LOAD OF GRAVEL WITH THE LOADER TO COVER THE DISTURBED SOIL CAUSED BY EXCAVATION OPT1.

1645 BEGIN COLLECTING SAMPLES FROM HAND EXCAVATED TEST PITS ON EAST SIDE OF SCHOOL TANK FARM.

1648 SAMPLE COLLECTED AT HTP-8. (3')

1650 SAMPLE COLLECTED AT HTP-9. (3.0' bgs)

1652 SAMPLE COLLECTED AT HTP-10 (3.0' bgs)

1658 SAMPLE COLLECTED AT HTP-11 (3.0' bgs)

1700 SAMPLE COLLECTED AT HTP-12 (3.0' bgs)

1710 SAMPLE COLLECTED AT HTP-2 (3.0 BGS)

1712 SAMPLE COLLECTED AT HTP-3 (3.0 BGS)

1715 SAMPLE COLLECTED AT HTP-4 (3.0 BGS)

Appendix B

Photo Log

Photo # 38: Hand-dug sample test pit at School Tank Farm.

Photo # 40: Hand-dug sample test pits on east end of School Tank Farm..

Photo # 103: Soil sample location on south end of School Tank Farm.

Photo # 91: Soil sample area on north end of School Tank Farm

Photo # 02: South side of School Tank Farm.

Photo # 01: West side of School Tank Farm.

Photo # 95: Approximately 6 feet below ground surface in STF3

Photo # 97: Excavation on west end of School Tank Farm (STF3).

Photo # 22: New Generator Building Tank Farm.

Photo # 21: Leaking pipe fittings at New Generator Building Tank Farm.

Photo # 68: Soil sample location at Airport Tank Farm.

Photo # 69: Soil sampling at Airport Tank Farm.

Photo # 12: Airport Storage Tanks.

Photo # 13: 1000 gallon Gasoline Tank at Airport.

Photo # 24: 10,000 gal. abandoned storage tank pumping shed.

Photo # 25: 10,000 gallon abandoned storage tank.

Photo # 70: Soil sample location at Airport Pipeline.

Photo # 73: Soil sample pit at Airport Pipeline.

Photo # 15: Pipeline from the Airport to the Generator Building.

Photo # 17: Welded joint in 4” pipe of pipeline.

Photo # 111: Soil sample test pit next to Old Generator Building.

Photo # 112: Stained soil from sample test pit OPT1.

Photo # 107: Soil sample location at PLP3-1.

Photo # 104: Soil sample location at PLP1-1,1-2,1-3.

Photo # 108: No sample collected (obvious contamination).

Photo # 109: Soil sample location at PLP5-1.

Appendix C

Chain-of-Custody and Laboratory Analytical Reports

CHAIN OF CUSTODY RE 1014913

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CLIENT: OASIS ENVIRONMENTAL
CONTACT: MAX SCHWENNE / KARL HILL PHONE NO: (907) 258-4880
PROJECT: BEAVER SITE:
REPORTS TO: OASIS MAX SCHWENNE/ KARL HILL FAX NO: (907) 258-4033
INVOICE TO: OASIS ENVIRONMENTAL P.O. NUMBER:

CT&E Reference:

PAGE 1 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C-COMP G-GRAB	Preservatives Used	Meth										REMARKS
							Analysis Required (3)	GRO/BTEX AK101/8021B	DRO/RRO AK102/AK103	PAH 8270 SIM								
	APT1-1	7/26/01	1742	Soil	2	G		✓	✓	✓								
	APT1-2	7/26/01	1800		1			✓										
	APT1-3		1858		1			✓										
	APT1-4		1930		1			✓										
	APT1-5		2005		1			✓										
	APT2-1		1840		1			✓										
	APT3-1	7/27/01	0840		1			✓										
	APT3-2		0917		1				✓									
	APT3-3		0950		1				✓									
	APT3-4		1019		1				✓									

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Nathan P. Ozz	7/31/01	13:15	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By: Trudi Taylor

(4)

Shipping Carrier:
Shipping Ticket No:
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.2°C, 5.6°C

Data Deliverables Required
(Level I) Level II Level III

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:
RUSH (3-DAY) TAT FOR DRO SAMPLES UNLESS OTHERWISE NOTED.

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

0-720

CHAIN OF CUSTODY RECOR

1014913

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INVOICE TO:

P.O. NUMBER:

CT&E Reference:

PAGE 2 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	Analysis Required (3) AE101/80218 Soil AE102/AE103 D20/260 8270 SIM PAH	REMARKS
	ABT 1-1	7/27/01	1340	Soil	2	G		✓ ✓	
	ABT 1-2		1340		1			✓	
	ABT 2-1		1355		1			✓	
	ABT 3-1		1400		1			✓	ASH
	ABT 2-2		1410		1			✓	
	NPT 1-1		1510		1			✓	
	NPT 1-2		1520		1			✓	
	NPT 1-3		1550		1			✓	
	NPT 1-4		1640		1			✓	
	NPT 1-5		1645		1			✓	

(5)

Collected/Relinquished By: (1) Nathan P. Ott	Date 7/31	Time 1315	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By:

(4)

Shipping Carrier:	Samples Received Cold? (Circle) YES NO
Shipping Ticket No:	Temperature °C: 5.2°C, 5.6°C
Data Deliverables Required	Chain of Custody Seal: (Circle)
Level I Level II Level III	INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:	

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

0-720

CHAIN OF CUSTODY RECOI 1014914

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CT&E Reference:

PAGE 3 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C-COMP G-GRAB	Preservatives Used	(3) Analysis Required: GRO/BTEX AK101/8021B	DRO/ERO AK102/AK103	8270 SIM PAH	REMARKS
	NPT2-1	7/27/01	1705	SOIL	2	G		✓	✓	✓	
	NPT5-1		1700		1				✓		NORMAL TAT ✓
	NPT2-2		1720		1				✓		
	NPT2-3		1725		1				✓		
	NPT3-1		1800		1				✓		
	NPT3-2		1810		1				✓		
	NPT4-1	7/28/01	0855		1				✓		
	STF1-1		1020		1				✓		
	STF7-1		1018		1				✓		NORMAL TAT
	STF1-2		1025		1				✓		

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Nathan P. Church	7/31	1315	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.2°C 5.1°C

Data Deliverables Required

Level I Level II Level III

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road **Fairbanks, AK 99701** Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

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CHAIN OF CUSTODY RECORD

1014914

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CT&E Reference:

Preservatives Used: MeOH

2.

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE (C = COMP, G = GRAB)	GRO/BTEX	AK101/8021B	DRO/RRO	AK102/AK103	PAH	8270 SIM					REMARKS
	STE1-3	7/28/01	1035	SOIL	1	G		✓									
	STE2-1		1055		1			✓									
	STE2-2		1057		1			✓									
	STE7-2		1046		1			✓									NORMAL TAT
	STE2-3		1115		1			✓									
	STE3-1		1330		1			✓									
	STE7-3		1300		1			✓									NORMAL TAT
	STE3-2		1425		2		✓	✓									
	STE3-3		1505		1			✓									
	STE3-4		1530		1			✓									

5.

Collected/Relinquished By: (1)	Date	Time	Received By:
[illegible signature]	7/31	1315	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By: [illegible signature]

4.
Shipping Carrier:
Shipping Ticket No:
Data Deliverables Required: Level I Level II Level III
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.2°C, 5.6°C
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

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CHAIN OF CUSTODY R 1014915

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CT&E Reference:

PAGE 5 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C-COMP G-GRAB	Preservatives Used: N/A	(3) Analysis Required: GRO/BTEX AK101 DRO/RRO AK102 AK103 PAH 8270 SIM	REMARKS
	STF3-5	7/28/01	1625	Soil	1	G		✓	
	STF3-6		1720		1			✓	
	STF3-7		1920		1			✓	
	STF3-8	7/29/01	0905		1			✓	
	STF3-9	7/29/01	0920		1			✓	
	STF3-10	7/28/01	1750		1			✓	
	STF4-1	7/29/01	0950		1			✓	
	STF4-2		0955		1			✓	
	STF5-1		1020		1			✓	
	HTP-2		1710		1			✓	✓

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
William P. Clark	7/31/01	1315	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By: Janet Tyk

(4)

Shipping Carrier:	Samples Received Cold? (Circle) YES NO
Shipping Ticket No:	Temperature °C: 5.2°C, 5.6°C
Data Deliverables Required: Level I Level II Level III	Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:	

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

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CHAIN OF CUSTODY RECORD

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FAX NO: ( )

INVOICE TO:

P.O. NUMBER:

CT&E Reference:

PAGE 6 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C-COMP G-GRAB	Preservatives Used	(3) Analysis Required: GRO/BTEX AK101/8021B	DRO/RRO AK102/AK103	PAH 8270 SIM	REMARKS
	HTP-3	7/29/21	1712	SOIL	1	G		✓			
	HTP-4		1715		1			✓			
	HTP-8		1648		1			✓			
	HTP-9		1650		1			✓			
	HTP-10		1652		1			✓			
	HTP-11		1658		1			✓			
	HTP-12		1700		1			✓			
	PLP1-1		1105		2		✓	✓	✓		
	PLP7-1		1000		*3 1			✓	✓		NORMAL TAT
	PLP1-2		1110		1			✓			

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
McKenzie P. Clark	7/31/21	1315	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/21	Time 1315	Received For Laboratory By: Trust Tk

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.2°C, 5.6°C

Data Deliverables Required

Level I Level II Level III

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

0-720

CHAIN OF CUSTODY RECORD

1014916

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- Alaska
- Maryland
- Michigan
- New Jersey
- West Virginia

www.cteesi.com

(1)

CLIENT:

CONTACT: PHONE NO: ( )

PROJECT: SITE:

REPORTS TO:

FAX NO: ( )

INVOICE TO:

P.O. NUMBER:

CT&E Reference:

PAGE 7 OF 7

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used	Analyses Required (3) GRO/BTEX	AK101/202/8	DRO/RRO	AK102/AK103	PAH	8270 SIM	REMARKS
	PLP1-3	7/29/01	1120	Soil	1	G			✓					
	PLP2-1		1300		1				✓					
	PLP2-2		1310		1				✓					
	PLP3-1		1400		1				✓					
	PLP5-1		1455		1				✓					
	OPT1-1		1535		2			✓	✓	✓				
	OPT7-1		1530		2			✓	✓					NORMAL TAT
	OPT1-2		1550		1				✓					
	TRIP BLANK 1	7/26/01	0800	Soil	1			✓						

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Nathan P. Olds	7/31/01	1315	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 7/31/01	Time 1315	Received For Laboratory By:

(4)

Shipping Carrier:	Samples Received Cold? (Circle) YES NO
Shipping Ticket No:	Temperature °C: 5.2°C, 5.6°C
Data Deliverables Required	Chain of Custody Seal: (Circle)
Level I Level II Level III	INTACT BROKEN ABSENT
Requested Turnaround Time and Special Instructions:	

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Retained by Sampler

0-720

Appendix D

Village Safe Water Well Borehole Log

002

21:41 FAX 907 457 6444 ICE WATER WELL

ICE WATER WELL, INC.
PO Box 10529
FAIRBANKS, ALASKA 99710
(907) 457-6444

WELL LOG 11-1-95 - 11-6-95

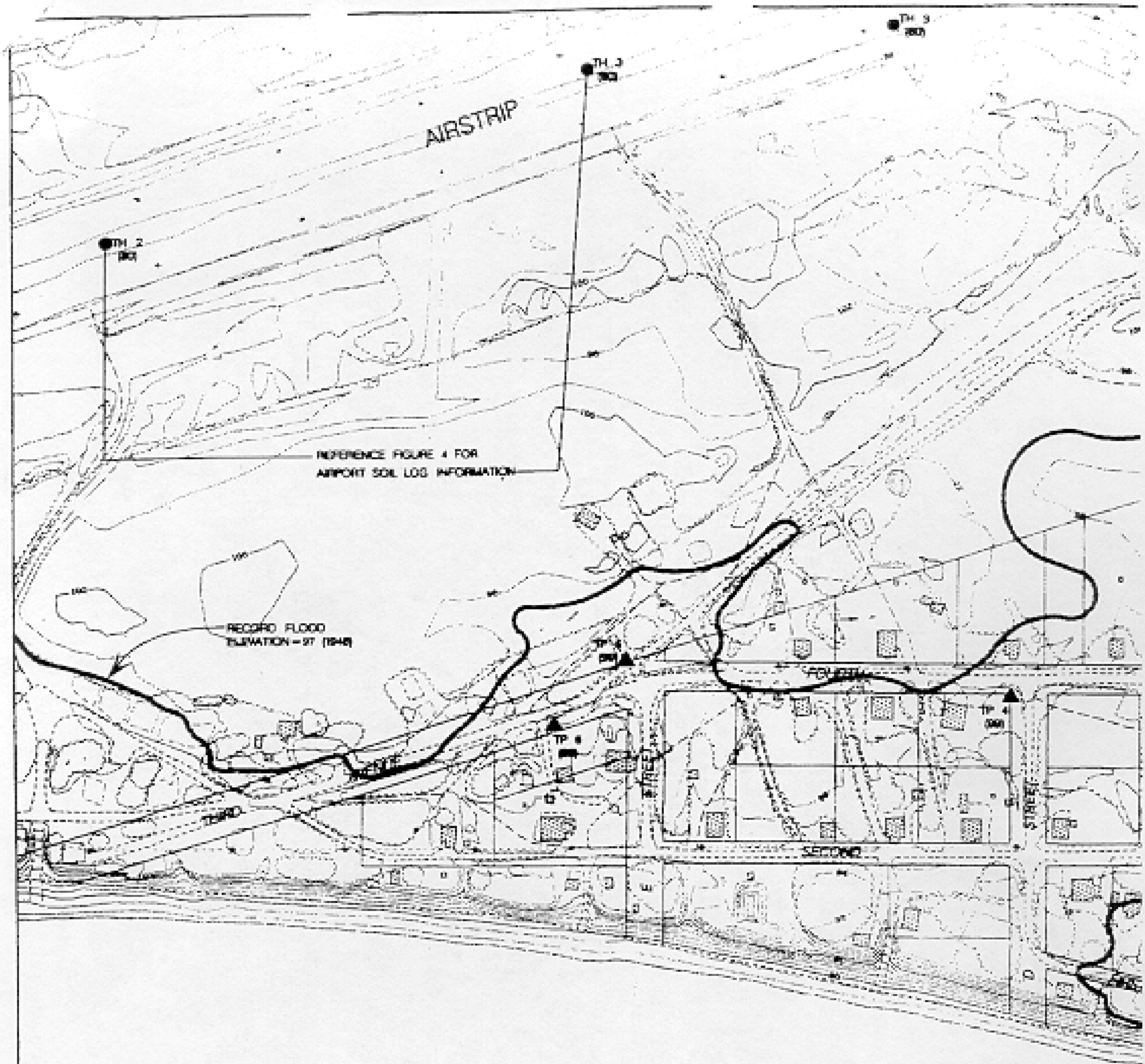
Well Owner: Village of Beaver Date Started: Date Finished:
Well Location: 1st Ave. River Bank Drive 2nd + Church Ave
Mailing Address: BEAVER ALASKA Sec. 15 T. 8S R. 20-W
Size of Casing: 6" Steel Depth of Hole: 70' Cased To: 60'
Static Water Level: 28' Drawdown: 4 inches Depth of Well: 10' SCREEN
Well Pump Test at: 30 gpm Gallons per Minute for 36 Hours

Formations Encountered:

0	2	Stick up
2	6	Silt
6	30	GRAVEL "Dry"
30	70	GRAVEL and Water
70	71	PERMA FROST GRAVEL
		Note: Well CAPPED w/ 1/4 PLATE
		location Between OLD
		BIA well + 1976 Comm. Well
		SEE MAP

Pump Installation:
Date Installed: 11-6-95 Type: "TEST" Size: 1 1/2 HP

Material Used:
6" Drive Shoe
60' STEEL CASING 6" x .250 WALL
10' SCREEN Assembly Packer + Bottom



NOTES:

1. SOIL LOG INFORMATION OBTAINED FROM SOILS INVESTIGATION AND FOUNDATION RECOMMENDATIONS FOR THE BEAVER SCHOOL SITE BY Jill_amba AND ASSOCIATES, DATED MARCH 1985. WELL INFORMATION CONTAINED IN A TRIP REPORT TO THE DESIGN ENGINEER ALASKA AREA NATIVE HEALTH SERVICES, DATED AUG. 1989.

2. FUEL TANK SOILS INVESTIGATION BY CLARKE ENGINEERING CO., 10/1999.

3. TEST PITS AROUND VILLAGE BY CRW ENGINEERING GROUP, 9/1999.

LEGEND

- ● SOIL TEST HOLE
- TH_2 DESIGNATION AND YEAR
- ▲ TEST PIT 1999

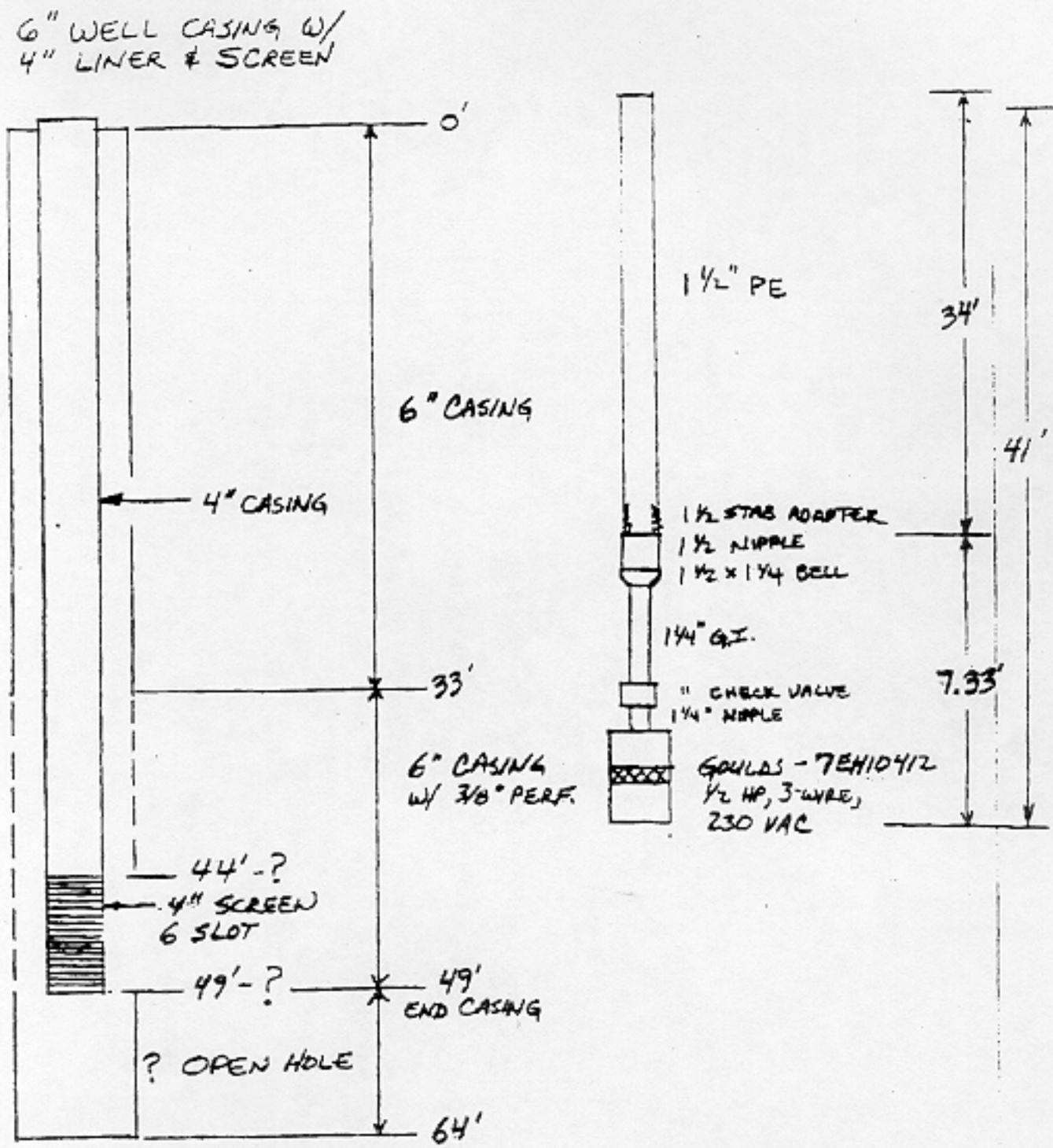
100 0 100

GRAPHIC SCALE

engineering group anchorage, alaska	State of Alaska Department of Environmental Conservation VILLAGE SAFE WATER PROGRAM	VILLAGE OF BEAVER WATER AND SEWER FEASIBILITY STUDY SOIL TEST HOLE LOCATIONS	Date: JAN 2000 Scale: USE GRAPHIC SCALE Figure: 5
Project: 9966 Status: DSR			

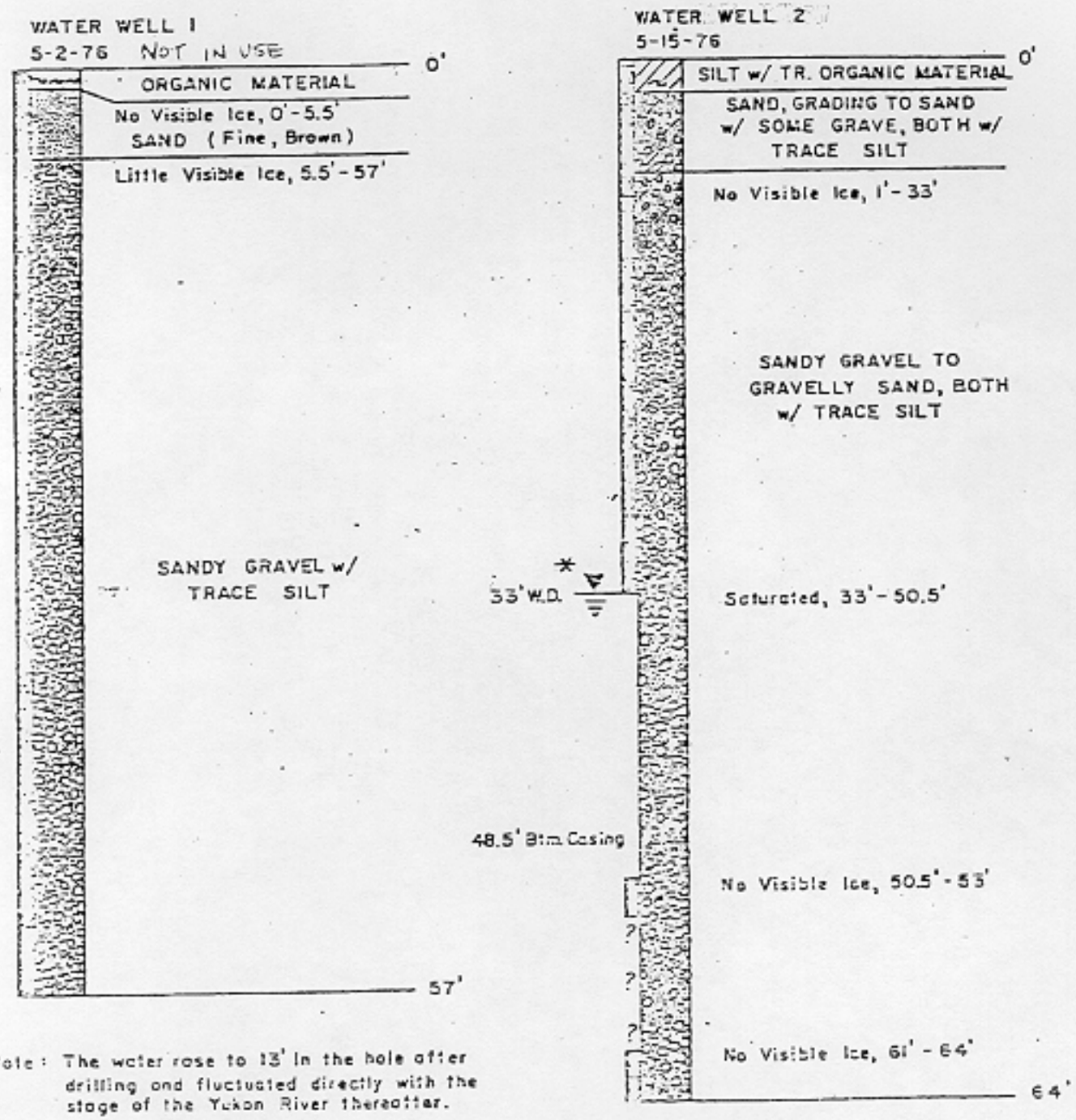
// BEAVER MELANEY 8/4/89 1/1

VSW WELL



WATER WELL

SCALE: 1" = 10' VERT.



* Note: The water rose to 13' in the hole after drilling and fluctuated directly with the stage of the Yukon River thereafter.

B&M CONSULTANTS, INC.

BEAVER ALASKA
WATER WELL INSTALLATION